```
The present sequence encodes a specifically claimed antigenic protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 53; Page 76-77; 162pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10-DEC-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  05-SEP-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12-DEC-1995;
                                                                                                                                                                                                                                                                                             27-AUG-2003
23-FEB-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9721817-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Takesako K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                     19-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                      Malassezia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Akiyama K,
                                                                                                                                                                                                                                                                            AAT85876;
                                                                                                                                                                                                                                         RESULT 1
                                                                                                                                                                                                                                                AAT85876
                                                                                                                                                                                                                                                                           Aat85876 Malassezi
Add35245 Mouse mit
Abt33645 Anticance
Aag70431 MHS: WnSOD
Abt09580 Phase-1 R
Aat15589 Human man
Aat34279 Human man
Aat34279 Human man
Aat3499 Human man
Aat3499 Human man
Abn84891 CDNA enco
Abn84891 Lunan man
Abr63836 Human man
Abr63836 Human man
Abx63836 Human cDN
Abx63836 Human cDN
Abx63836 Human cDN
Abx63836 Human cDN
Abx63836 Ruman cDN
Abx63836 Human cDN
Abx63836 Ruman bsr
Abx63836 Human cDN
Abx63836 Human cDN
Abx63836 Human man
Aag9428 Human cDN
Abx63836 Human man
Aag9428 Human man
Aag9428 Human man
Aad5635 Human man
Aad36690 Human man
Aad3690 Human msc
                                                  1, 2004, 08:33:07; Search time 1398.42 Seconds (without alignments) 11033.514 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                           1 toctgttgataatctttcta......aagagcttgaaccattgtag 3632
                                                                                                                                                                                                                                                                                                                                                                                                                                    Description
                                                                                                                                                                          6747726
GenCore version 5.1.6
(c) 1993 - 2004 Compugen Ltd
                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                       3373863 seqs, 2124099041 residues
                                                                                                                                                                                                                                                                                                                                                                                                        SUMMARIES
                                                                                                                                                                                                                    Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                  OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAQ53193
AAT15589
AAT34277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABA94453
ADE76309
ABX63836
ABL66512
ABK84524
AAQ94284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAL26545
AAD39690
AAC02178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAQ70431
ABT09580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAA63891
ABN84891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ABK63720
ADB58236
                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAT85876
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABT33645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAX24998
                                                                                                                            IDENTITY_NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                 genesequ2000s:
genesequ2001as:*
genesequ2001bs:*
genesequ2002s:*
genesequ2003as:*
                                                                                                                                                                                                                                                         N Geneseq 29Jan04:*
                                                                                                                                                                                                                                                                                                                                  geneseqn2003bs:*
                                                                                                                                                                                                                                                                                                                                          geneseqn2003cs:*
                                                                                                                                                                                                                                                                                                                                                   geneseqn2004s:*
                                                                                                                                                                                                                                                                  geneseqn1980s:*
geneseqn1990s:*
                                                                                                                                                                                           length: 0
length: 2000000000
                                                                                      US-09-727-855B-1
3632
                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1046
1438
1492
1492
2504
325
                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1026
        Copyright
                                                    April
                                                                                                                                                                                                                                                                                                                                                                                                                        Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                    sed
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Perfect score:
                                                                                                                            Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                   Score
                                                                                                                                                                                          Minimum DB
Maximum DB
                                                                                                            Seguence:
                                                                                                                                                       Searched:
                                                                                                                                                                                                                                                         Database
                                                      uo
:
                                                                                                                                                                                                                                                                                                                                                                                                                         Result
                                                                                                                                                                                                                                                                                                                                                                                                                                   No.
```

- m	2 AAQ20194 Aaq20194	2010 2010 2010 2010 2010 2010 2010 2010	813 I	.0 969 2 AAT31018 Aat31018 Human	37.6	.0 976 2 AAX08429 Aax08429 Human	7 ABZ83721 Abz83721	.0 3789	2208 7 ABX63709	.0 3300 2	.0 3300 2 AAZ20707	3300	1.9 977 2 AAV73824 Aav73824 Human SOD	631	1.9 702 3 AAF14076 Aaf14076 Aspergill	1.9 2809 9 ADB68898 C. neofor	894
7 6	010	0 681 3	0 813 1	0 969 2	276 2	976 2	2 916	0 3789 3	2208 7	3300 2	3300 2	9 0088 0	977 2	9 631 7	9 702 3	9 2809 9	894 9
7	6 72.4 2	72.77	72.4	72.4	72.4 2	72.4	72.4 2	72.4	_	7.1	71	71	1 70.8 1		7	68.6 1	5 68.2 1
N N	9.0	1010	4 m	mi i	'nία	'n	m	m	'n	m	'n	4	4	4	4	Ω	4

ALIGNMENTS

```
Antigenic proteins from the fungus Malassezia - bind to IgB antibodies present in patients with Malassezia allergies, useful for diagnosis, treatment and prevention of such conditions.
                                                                                                                                                                                      Malassezia; fungus; antigenic; human; IgE; immunoglobulin E; antibody; allergy; antigen; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kato I;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ×
                                                                                                                                             Malassezia fungus MF-3 antigenic protein encoding cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Onishi
                                                                                                                                                                                                                                                                                         Location/Qualifiers
4. 621
/*tag= a /product= "MR-3_antigenic_protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kuroda M,
mRNA; 728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yagihara T,
Yamaguchi H;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                96WO-JP003602.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95JP-00346627,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            96JP-00257612.
96JP-00257613.
    to
                                                                                                       (first entry)
  AAT85876 standard; cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (TAKI ) TAKARA SHUZO CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Okado T,
Yasueda H,
                                                                                   (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 1997-332788/30.
P-PSDB; AAW29770.
```

```
1364
                                                                                                                                                                                                                                                                                                                                    1424
                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The invention relates to a novel array comprising at least two isolated nucleotide molecules, each molecule having a sequence capable of uniquely hybridising to a nucleic acid molecule which is an expression product of a gene involved in mitochondrial biology. The array comprises two or more isolated nucleic acid molecules or spots, each molecule having a sequence chosen from sequence of 994 human probes and 2046 mouse probes. An array of the invention is useful for determining an expression profile of a mouse or human sample containing nucleic acid, by contacting the array with the sample under conditions allowing selective hybridisation, and measuring hybridisation of nucleic acid in the sample to the array to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Array containing probes for genes involved in mitochondrial biology, useful for determining mitochondrial biology gene expression profiles for use in diagnosing pathologies and identifying biochemical pathways.
                                                                                                                                                                                                                                                                                            50 argegeriogagecerrrarereraaggagareargaegreeaeeaeeaeaagaeee 109
                                                                                                                                                                                                                                                                                                                                                                           110 AGACCTACGTGAACAACCTCAACGCCGCCGAGAAGGCGTACGCTGAGGCGACGGCCGCGA 169
              IgE antibodies present in patients with allergic conditions. Antigenic proteins, peptides and nucleic acids from the fungus Malassezia can be used in the diagnosis, treatment and prevention of allergic conditions due to Malassezia organisms (such as M.furfur, M. sympodialis and M.pachydermatitis). (Updated on 27-AUG-2003 to correct OS field.)
isolated from the fungus Malassezia. The antigenic protein can bind to
                                                                                                                                                                                                                                                       1305 AGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCACACCACATC
                                                                                                                                                                                                                                                                                                                                      AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGG
                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ds; mouse; array; mitochondrial; hybridisation; energy-metabolism; mitochondrial disease; oxidative phosphorylation dysfunction;
                                                                                                                                                                                                                  ;
0
                                                                                                                                                                       2.3%; Score 84.2; DB 2; Length 728; Larity 71.9%; Pred. No. 5.2e-14; Conservative 0; Mismatches 43; Indels (
                                                                                                                                      Sequence 728 BP; 205 A; 204 C; 203 G; 116 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                1425 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mouse mitochondrial DNA sequence SEQ ID NO:3025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Procaccio V;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       170 ACGACGÍCCITAAGCAGAÍCCAGCÍGCAGAGÍG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 2; SEQ ID NO 3025; 201pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          oxidative stress; apoptosis; aging.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kerstann K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2001US-0316323P.
2001CA-02356540.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30-AUG-2002; 2002WO-US027886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADD35245 standard; DNA; 897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Levy S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2003-300821/29
                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMORY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO2003020220-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30-AUG-2001;
31-AUG-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (UYEM-) UNIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-JAN-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Wallace DC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-MAR-2003
                                                                                                                                                                                                                110;
                                                                                                                                                                                                                                                                                                                                      1365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADD35245;
                                                                                                                                                                         Query Match
                                                                                                                                                                                                  Local
                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
8x22222x8
                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                    \delta
                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                              à
```

```
produce an expression profile. The array is also useful for determining an expression profile of a first labelled sample containing nucleic acid acid. The second sample is a reference or a standard. An array is useful for determining an expression profile diagnostic of an energy-metabolism-calated physiological condition. An array of the invention is useful for determining mitochondrial biology gene expression profiles of organisms, such organisms, which are useful for determining mitochondrial biology gene expression profiles of organisms, such organisms, which are useful for determining expression profiles diagnostic of energy metabolism-related physiological conditions, dentifying biochemical pathways, genes, and mutations involved in such physiological conditions, identifying biochemical conditions, and mutations involved in such physiological conditions, identifying animal models of human charapies, and creating and identifying animal models of human contentions are well as distinguishing clinical disorders that result from oxidative phosphorylation (OXPHOS) dysfunction, oxidative stress, apoptosis and array of the invention contains probes of genes or profiles for mitochondrial biology. The expense of the invention contains probes of genes and any array of the invention contains probes of genes are not previously recognised to participate in mitochondrial biology. The expense of the invention contains probes of genes are all the expense and a proposes a proposes and the previously recognised to participate in mitochondrial biology. The array of the invention contains probes of genes are all the propersion of perviously recognised to participate in expense mitochondrial biology. The array of the invention contains probes of genes and a participate in the previous of the provious of the previous of the provious of the 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         My; tumour; anticancer agent; drug tolerance factor; gene repair; acid metabolism; large-scale gene-expression profiling;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCACCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   clones used to make the probes of the invention. Some sequences are present, these are SEQ ID NO's 295, 1174, 1213, 1700, 1728, 1730, 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8; DB 9; Length 897;
2.6e-12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 897 BP; 225 A; 214 C; 247 G; 211 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Anticancer agent target gene fragment SEQ ID No 49.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1427 GAIGIGCTIACCCAGGITAAGCTICAGICTGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Azuma A, Fukushima M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.2%; Score 78.8; D
69.5%; Pred. No. 2.6e
tive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          03-JUL-2002; 2002WO-JP006754.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        05-JUL-2001; 2001JP-00204448.
07-AUG-2001; 2001JP-00239181.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ABT33645 standard; DNA; 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CO LID.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Koizumi K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               housekeeping gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (TAIH ) TAIHO PHARM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNA array; tumour;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO2003004640-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16-JAN-2003.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22-MAY-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Takechi T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       281 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABT33645;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABT33645
            임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
```

```
1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                              acid substitution in a region which does not affect enzyme activity, of a positively charged amino acid residue, which has the effect of raising the isoelectric point of the peptide. These Mn-SoD variants are useful as medical prepns. for the treatment of human arthritis and diseases caused by active oxygen, and as cosmetic prepns. They are also useful for and diabetes. Examples of variant Mn-SoDs are given in AAQ70431-32. (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                         Human variant manganese super-oxide dismutase with aminoacid mutation in
non-essential regions - for treatment of arthritis, active oxygen related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  106 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 165
                                                                                                                                                                               Human variant manganese superoxide dismutase (Mn-SOD) comprises an amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Evaluating the toxicity of an agent, useful in drug development or in determining toxicological responses to a new drug, by determining the expression of rat toxicologically relevant genes in the test animal in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rat; toxicity study; rat toxic response gene; toxicological response; drug development; phase-1 rat CT gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                          Score 74; DB 2; Length 627;
Pred. No. 5.6e-11;
0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                    Sequence 627 BP; 175 A; 152 C; 160 G; 140 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  166 GATGITACAGCCCAGATAGCTCTTCAGCCTGCAC 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (PHAS-) PHASE-1 MOLECULAR TOXICOLOGY INC.
                                                                                                                                       Example 3; Page 16-17; 34pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CT gene SEQ ID No 668.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Farr SB;
                                                                            non-essential regions - for disorders and for cosmetics.
                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 67.5%;
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29~JAN-2002; 2002WO-US002935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29-JAN-2001; 2001US-0264933P.
26-JUL-2001; 2001US-0308161P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            response to the test agent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ABT09580 standard; DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Farris G, Hicken SH,
WPI; 1994-234688/28.
P-PSDB; AAR60360.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2002-674961/72.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200266682-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    05-DEC-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Phase-1 Rat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29-AUG-2002.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rattus sp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 5
ABT09580
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                The invention relates to a novel DNA array for measuring sensitivity of a tumour to an anticancer agent comprising at least thirteen different target gene fragments selected from at least two types of gene including genes for, enzymes associated with nucleic acid metabolism, gene repair, is used for large-scale gene-expression profiling, especially for array assaying the sensitivity of tumours to anti-cancer agents. This polymucleotide sequence represents a target gene fragment of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1367 ACTINIGITAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        114 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 173
                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          54 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACCACGAAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cosmetic; mutation;
inflammation; cancer;
                                                    expression of a number of different target sensitivity of tumors to anticancer agents.
                                                                                                                                                                                                                                                                                                                                                                                                     Score 74; DB 7; Length 270; Pred. No. 3.2e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                             50, Indels
                                                                                                                                                                                                                                                                                                                                                           Sequence 270 BP; 72 A; 86 C; 66 G; 46 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /*tag= a
406 .408
/*tag= b
/trans1_except= pos:406. .408, aa:Gly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         174 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Manganese superoxide dismutase; MnSOD; oxygen; arthritis; variant; enzyme; isoelectric point; premature retinopathy; hypertension; diabetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Mismatches
                                                                                                                Disclosure, Page 73; 83pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (SIIT-) SII TECHNORESEARCH INC.
                                                                                                                                                                                                                                                                                                                                                                                                     2.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               93WO-JP001917.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     92JP-00359959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAQ70431 standard; DNA; 627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity v...
Matches 104; Conservative
                                                    for measuring
for measuring
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        909.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (revised)
              WPI; 2003-210360/20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Katsuta K;
                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MHS: MnSOD variant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           28-DEC-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9414950-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28-DEC-1992;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25-MAR-2003
28-FEB-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     07-JUL-1994
                                                                          fragments
                                                  DNA array
                                                                                                                                                                                                                                                                                                                       nvention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAQ70431;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kondo M,
```

AAQ7043

à g ò g à g Homo

Gaps . 0

```
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hartman JR, Beck Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1996-059735/07.
P-PSDB; AAR90713.
                                                                                                                                                                                                                                    Query Match
Best Local Similarity
Matches 104; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  25-MAR-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-MAR-1987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-FEB-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EP691401-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25-MAR-2003
06-APR-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAT15589;
                                                                                                                                                                                                                                                                                                                  1307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      du
                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                    1366
                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                          ACTIAIGITAACGGCCTCAACGCIGCCGAGGAGAGCIACICGGCCGCTGIGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                              184 Acctracercaacaarcreaacercaceaadaaaaraacacaaageceredeceaagea 243
                                              agent comprising determining the expression of a rat toxic response gene(s) in the test animal in response to the agent. The method is useful in drug development, particularly for conducting toxicity studies and analysis before a new drug or compound is approved for human consumption or use. The method is also useful in determining toxicological responses to a new drug. This polynucleotide sequence represents a phase-1 rat CT gene of the invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MnSOD; manganese superoxide dismutase; N-terminal; catalyst; reperfusion; injury; ischaemia; superoxide; SO; molecular oxygen; anti-inflammatory;
                                   invention relates to a method used for evaluating the toxicity of an
                                                                                                                                                                                                                                                                                                                    1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Expression plasmid in Escherichia coli host system - encodes human manganese superoxidedismutase analogue, useful for e.g. treating
                                                                                                                                                                                                                                                                               .;
                                                                                                                                                                                                                                          Score 74; DB 6; Length 666;
Pred. No. 5.9e-11;
0; Mismatches 50; Indels
                                                                                                                                                                                                       Sequence 666 BP; 172 A; 164 C; 182 G; 146 T; 0 U; 2 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATGTTACAACTCAGGTTGCTCTTCAGCCTGCAC
   Disclosure; Page 270; 388pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (BIOT-) BIO-TECHNOLOGY GENERAL CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "MnSOD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              86US-00907051.
86IE-00002851.
87US-00032734.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           92US-00912213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              85US-00801090
                                                                                                                                                                                                                                              2.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAQ53193 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      89US-00453057
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*tag= a
/product=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hartman JR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1993-404931/50.
                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P-PSDB; AAR44801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10-JUL-1992;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22-NOV-1985;
                                                                                                                                                                                                                                                                               104;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US5270195-A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   29-0CT-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13-DEC-1989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12-SEP-1986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-MAR-1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21-JUN-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDNA
                                                                                                                                                                                                                                                                                                                                                                                              1367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAQ53193;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Beck Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            244
                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ношо
                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAQ53193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         THE STANDARD STANDARD
     ð
                                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
```

```
1367 ACTIATGITAACGGCCTCAAACGCTGCCGAGGAGACTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                       ö
                                                   t
                                                                                                                                                                                                                                                                                                                                                                                                                                                               210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      211 gecriacergaacaacergaacercaeceaedadaacraecaedageerredeeaadea 270
                                           The sequence encodes a maganese superoxide dismutase which can be used to catalyse the reduction of superoxide (SO) radicals to hydrogen peroxide and molecular oxygen. It can be used to reduce reperfusion injury following ischaemia and prolong the survival of excised organs. It can also me used as a long anti-inflamatory drug. (Updated on 25-MAR-2003 to correct PF field.) (Updated on 25-MAR-2003 to correct PR field.)
                                                                                                                                                                                                                                                                                                                                                                                                              GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                            151 gecerggaacereacareaceegeagareareeagereeaceacaacaacaageacacee
                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human; manganese superoxide-dismutase; T-lymphocyte; probe; cDNA; Escherichia coll; plasmid pMS8-4; N.terminal truncation; cloning; aminopeptidase; antiinflammatory; oxygen free radical scavenger; synovial inflammation; arthritis; lung fibrosis; ds.
                                                                                                                                                                                                                                                                                                                                                          .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product= "Manganese superoxide-dismutase"
note= "EC-1.15.1.1"
                                                                                                                                                                                                                                         Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                   Length 813;
                                                                                                                                                                                                                                                                                                                                                    50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                   Score 74; DB 2;
Pred. No. 6.7e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       dardracagcccadaragcrcrrcadccrdcad 304
                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human manganese superoxide-dismutase cDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BIOT-) BIO-TECHNOLOGY GENERAL CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
Claim 1; Fig la-1c; 27pp; English.
                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nimrod A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95EP-00106995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             87US-00032734
88US-00161117
                                                                                                                                                                                                                                                                                                   2.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAT15589 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /*tag= b
115. .708
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ಥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .711
                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    43. .114
```

```
89US-00453057
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                  P-PSDB; AAW00018
  13-DEC-1989;
10-JUL-1992;
14-SEP-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO9913088-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches 104;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sig peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAX24998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               field.)
                                                                                                                                                                                                                                             Use of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAX24996
      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ·
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                          The sequence encodes a human manganese superoxide-dismutase (MnSOD), and has been isolated from a human T-lymphocyte cDNA library in phage lambdagt10 in Escherichia coli, by screening with a 5-probe (AATISS91) and a 3-probe (AATISS91) and a 3-probe (AATISS92). The sequence of the insert in plasmid pMS8-4 (obtained by subcloning in plasmid pBR322) is shown. The cDNA may be expressed in e.g. E. coli for production of recombinant MnSOD. The MnSOD product may be cleaved with Aeromonas proteolytica aminopeptidase to produce an N-terminally truncated analogue with lysine and optionally histidine residues removed. The MnSOD analogue may be used in therapy of conditions associated with generation of oxygen free radicals, particularly synovial inflammation, arthritis and lung fibrosis (claimed). (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                211 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 270
                    New human manganese super:oxide dismutase analogues - having a Lys and opt. His residue absent from the N-terminus, useful for treating e.g. synovial inflammation, arthritis or lung fibrosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            151 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACACAAGCAACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Manganese superoxide dismutase; MnSOD; reperfusion injury; ischaemia; bronchial pulmonary dysplasia; inflammation; antiinflammatory; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity 67.5%; Score 74; DB 2; Length 813; Matches 104; Conservative 0; Mismatcher 17
                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    271 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human manganese superoxide dismutase cDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ocation/Qualifiers
                                                                                                        Example 1; Fig 1; 45pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ВP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             85US-00801090.
86US-00907051.
86IE-0002851.
87US-00032734.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAT34277 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       95US-00370461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  43. .114
/*tag= b
115. .708
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           43. .711
/*tag= a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12-SEP-1986;
29-OCT-1986;
27-MAR-1987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       09-JAN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US5540911-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22-NOV-1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-JUL-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAT34277;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAT3427
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HANGE STATE OF THE STATE OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
```

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1367 ACTIATGITAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A cDNA clone (AAT34277) codes for human manganese superoxide dismutase (MnSOD) (AAW00018), an enzyme that catalyges the reduction of superoxide radicals to H2O2 and 02. It was isolated from a human T - cell library cloned into vector gr10 using probes (see also AAT34283- 84) based on portions of mature MnSOD. The MnSOD gene was also identified (see also AAT34278-82). The cDNA can be used for the prodn. of recombinant MnSOD using e.g. Escherichia coll cells as hosts. The MnSOD is useful for reducing reperfusion injury, treating inflammation or bronchial pulmonary dysplasia and for prolonging survival of excised organs. (Updated on 25-MAR-2003 to correct PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           211 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 270
                                                                                                                                                                                                                                                                                                                                                                     Jse of recombinant human manganese super:oxide dismutase - for treating inflammation or bronchial pulmonary dysplasia, reducing reperfusion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            151 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACCACAAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Superoxide dismutase; MnSOD; SOD; human; protein engineering; enzyme engineering; antioxidant; antiinflammatory; cytotoxicity; inflammation; reperfusion injury; therapy; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 813;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2.0%; Score 74; DB 2; Lei
67.5%; Pred. No. 6.7e-11;
. Mismatches 50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human native manganese superoxide dismutase cDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dandinacaddddadanacucirdadddigadd 304
                                                                                                           (BIOT-) BIO-TECHNOLOGY GENERAL CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                  injury or prolonging organ survival
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 1; Fig 1A-1C; 27pp; English
92US-00912213.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAX24998 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            05-JUL-1999 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              43. .114
/*tag= b
115. .708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *tag=
                                                                                                                                                                                    Hartman JR, Beck Y;
                                                                                                                                                                                                                                                             WPI; 1996-361912/36.
```

```
1367 ACTIVATGITAACGGCCICAACGCIGCCGAGGAGGCIACICGGCCGCIGIGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present sequence encodes a human manganese superoxide dismutase protein (hMm SOD). The specification describes a modified hMm SOD which has a catalytic activity which differs from natural hMm SOD in that it exhibits reduced or no product inhibition compared to natural hMm SOD. The natural hMm SOD is especially modified with one or more substitutions in amino acids 26, 30, 34, 74, 143, 159, 161 and 163. The modified hMm SOD is useful for protecting a cell from damage caused by superoxide radicals and for treating a cell from damage caused by superoxide radicals. The protein is useful for treating inflammation and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Novel human manganese superoxide dismutase protein useful as antioxidant for treating cytotoxicity caused by superoxide radicals, inflammation and reperfusion injury following ischemia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            211 gecthaccheanchantehachteachadanahachteachadangachteachadan 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     151 geceriggaacereacareaacgegeagareargeagergeaceacagaagaagaaga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Superoxide dismutase; SOD; hSODm; enzyme; human; osteopathic; antirheumatic; antiarthritic; vasotropic; antinflammatory; gene; ss.
                        /transl_except= (pos: 505. .507, aa: Xaa)
/transl_except= (pos: 511. .513, aa: Ala)
/transl_except= (pos: 511. .513, aa: Ala)
/product= "manganese superoxide dismutase"
/note= "Xaa is Gln or Glu"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 74; DB 3; Length 813;
Pred. No. 6.7e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human manganese superoxide dismutase gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         reperfusion injury following ischemia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Col 25-26; 27pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABN84891 standard; cDNA; 849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98US-00151052.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97US-00927230.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         / Match 2.0%;
Local Similarity 67.5%;
                                                                                                                                                                                                  /*tag= b
115. .708
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15-NOV-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 104; Conservative
                                                                                                                                                                      43. .114
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nick HS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (UYFL ) UNIV FLORIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2000-578537/54.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; AAB08204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Silverman DN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10-SEP-1997;
                                                                                                                                                                      sig_peptide
                                                                                                                                                                                                                                                                                                                                         US6107070-A
                                                                                                                                                                                                                                                                                                                                                                                                         22-AUG-2000
                                                                                                                                                                                                                                         mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ABN84891;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ABN84891
   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   쉼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ZZXEXEXEX
SZXEXEX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This cDNA sequence codes for human manganese superoxide dismutase
(hwm.SOD, see AAW98169). Novel Mm.SOD proteins having catalytic activity
which differs from this natural hum.SOD are claimed. The modified proceins
exhibit reduced or no product inhibition, or have greater activity, or
both, compared to natural hum.SOD. The modifications involve one or amino
acid substitutions within the active site of the enzyme, especially at
residues His-26, His-30, Tyr-34, His-74, Gln-143, Asp-159, Trp-161 and
His-163 (see also AAW98171-77). Nucleic acids encoding the modified and
hwm.SOD proteins are also claimed. The modified hum.SOD proteins, or
cypression vectors in which modified hum.SOD nucleic acids is linked to a
promoter (preferably mammalian), can be used to protect a cell linke from
damage caused by superoxide radicals (claimed). They can also be used to
creat subjects suffering from, or at risk of, cytotoxicity caused by
superoxide radicals (claimed) As such, they can be used as antioxidants
in the treatment of a variety of disorders, including inflammation
(claimed), reperfusion injury following ischemia (claimed), and cellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACACCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1367 ACTIANGINAACGGCCICAACGCTGCCGAGGAGAGCIACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                211 gecriacgigaacarcergaacgicaacdaagaagaagiaccaagaagagacaagaga 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                151 ececiteda aceter carica a cececa de incarica de careca con caraca de careca en constante de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human; manganese superoxide dismutase; hMn SOD; superoxide radical; superoxide radical damage; cytotoxicity; inflammation; ischemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New recombinant human manganese superoxide dismutase proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 74; DB 2; Length 813;
Pred. No. 6.7e-11;
0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cDNA encoding a human manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      damage caused by chemotherapeutic agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Page 52-53; 61pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAA63891 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.0%;
                                                                                                                                                                             97US-00927230.
                                                                                                             98WO-US018842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 67.5
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       reperfusion injury; ss.
                                                                                                                                                                                                                                                                                                                    Nick HS, Silverman DN;
                                                                                                                                                                                                                                                (UYFL ) UNIV FLORIDA.
                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1999-229242/19.
                                                                                                                                                                                                                                                                                                                                                                                                                    P-PSDE; AAW98169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sapiens
                                                                                                             10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    04-DEC-2000
                                                                                                                                                                             10-SEF-1997;
                                      18-MAR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ношо
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Key
```

g à g ò q ò

Gaps

. 0

210

```
1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1367 ACTIAIGITAACGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The invention relates to a method of treating a patient with inflammatory joint disease. The method involves intra-articularly injecting into the afflicted joint a solution of human manganese superoxide dismutase (hSDDm). The treatment is used to treat an inflammatory joint disease, particularly osteoarthritis or rheumatoid arthritis. The method can also be used to treat post ischemic tissue injury. The present sequence represents a cDNA encoding the hSODm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   268 GCCTACGTGAACGTCACGTCACGAGGAGGAGTACCAGGAGGCGTTGGCCAAGGGA 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Treating inflammatory joint disease such as osteoarthritis, rheumatoid arthritis and post ischemic tissue injury, comprises injecting human manganese superoxide dismutase.
                                                                                                              Human manganese superoxide dismutase; antiinflammatory; antiarthritic; antirheumatic; vasotropic; osteopathic; hSODm; human; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     208 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACAGGAAGCACCACGCG
                                                                        Human manganese superoxide dismutase (hSODm) encoding cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 849 BP; 256 A; 197 C; 227 G; 169 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.0%; Score 74; DB 6; Length 849; 67.5%; Pred. No. 6.9e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  328 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mullenbach GT;
                                                                                                                                                                                                             Location/Qualifiers
100. .768
                                                                                                                                                                                                                                                                     "hSODm"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 2; Fig 4; 14pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADE76309 standard; DNA; 930 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                86US-00918534.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       86US-00918534.
                                                                                                                                                                                                                                                 /*tag= a
/product= 100..171
                                    (first entry)
                                                                                                                                                                                                                                                                                                            J= b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                          172 .76
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hallewell RA, Bell GI,
                                                                                                                                                                                                                                                                                                            ′*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2002-129495/17.
P-PSDB; ABB07330.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (CHIR ) CHIRON CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
                                                                                                                                                                         Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-OCT-1986;
                                    09-APR-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14-OCT-1986;
                                                                                                                                                                                                                                                                                                                                                                                    JS6326003-B1
                                                                                                                                                                                                                                                                                       sig_peptide
                                                                                                                                                                                                                                                                                                                              mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                          04-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 13
ADE76309
ID ADE76
XX
AC ADE76
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The present sequence is the nucleotide sequence of human manganese supercoxide dismutase (hSODM) cDNA. The cDNA was isolated from an adult human kidney cDNA library in lambda-g110 using the probes given in ABN84889-90. The invention relates to methods for hSODM gene cloning and expression in microorganisms, especially Escherichia coli or Saccharomyces cereviales. The hSODM cDNA is inserted into a vector for expression in the microbial host, preferably under conditions which allow for processing to remove the N-terminal methionine. The expression product is useful for treating a partient having inflammancory joint disease (e.g. osteoarthritis or rheumatoid arthritis), or to minimise post-ischaemic tissue damage resulting from disease or surgery
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1367 ACTIATGTTAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Preparing recombinant human manganese superoxide dismutase, useful in the treatment of osteoarthritis and rheumatoid arthritis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       268 GCCTACGTGAACAACCTGAACGTCACCGAGGAAGTACCAGGAGGCGTTGGCCAAGGGA 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         208 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 849 BP; 256 A; 197 C; 227 G; 169 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 849;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 74; DB 6; Length 8*7.
Pred. No. 6.9e-11;
                                                                              /*tag= a
/note= "EcoRI linker used in cloning"
                                                                                                                                                                                                                                                                                                     'note= "EcoRI linker used in cloning"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1427 GAIGIGCITACCCAGGITAAGCITCAGICTGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mullenbach GT;
                                                Location/Qualifiers
                                                                                                                                                                   "hSODm"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Example 1; Fig 4; 16pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ABA94453 standard; cDNA; 849 BP
                                                                                                                                                                                                                                                                                                                                                                                                                      2001US-00878589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.0%;
                                                                                                                                              /*tag= b
/product=
                                                                                                                                                                                                         /*tag= c
172. .765
                                                                                                                                                                                     .171
                                                                                                                                                                                                                                               /*tag≈ d
842. .849
                                                                                                                                                                                                                           .765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity 67.5
Matches 104; Conservative
                                                                                                                                                                                                                                                                                     /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bell GI,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2002-626527/67.
P-PSDB; ABB79798.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (CHIR ) CHIRON CORP
                                                                                                                                                                                                                                                                                                                                              US2002081287-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hallewell RA,
                Homo sapiens
                                                                misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                      11-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            14-OCT-1986;
                                                                                                                                                                                                                                                                   misc feature
                                                                                                                                                                                       sig_peptide
                                                                                                                                                                                                                             mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                  27-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    328
```

ö

Gaps

. 0

50; Indels

ADE76309

RESULT 12 ABA94453 ID ABA9 XX

a 8 26-FEB-2003 (first entry)

```
monocyte; macrophage; gene expression profile; rheumatoid arthritis; chronic inflammatory disease; bacteria-induced inflammation; arteriosclerosis; tumour; organ; tissue transplant; sepsis; molecular classification; human; BSK; ss.
                     Human BSK-1H13 complementary strand DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABX63836 standard; cDNA; 972
                                                                                                              02-OCT-2002; 2002EP-00090348.
                                                                                                                            09-NOV-2001; 2001DE-01055600.
                                                                                                                                                       Stuhlmueller B, Haeupl T;
       (first entry)
                                                                                                                                          (OLIG-) OLIGENE GMBH.
                                                                                                                                                                      WPI; 2003-443090/42.
                                                                      Homo sapiens
                                                                                   EP1310567-A2.
       29-JAN-2004
                                                                                                 14-MAY-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABX63836;
                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                               1427
                                                                                                                                                                                                   cells.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABX63836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                XXXX
임
                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                       ð
```

The invention relates to a novel device for diagnosis, prognosis and monitoring of therapy having, on its surface, sequences of some or all of specified monocyte-macrophage genes and also of other genes or RNA complementary to the specified genes. The device of the invention may be used to determine gene expression profiles for measurement of monocyte or macrophage activation or inflammation in blood or other tissues, as well as for the diagnosis, prognosis and monitoring therapy in cases of the induced inflammation, arteriosclerosis, tumours, organ or tissue transplants and sepsie. The device provides information for molecular classification and staging of disease, creation of a patient-specific prognostic profile and suggestions about molecular pathogenesis or therapeutic effects, thus facilitating the development of new therapeutic strategies and pharmacological concepts. The current sequence is that of the human BSK DNA of the invention. ò 1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426 126 Device for diagnosis, prognosis and monitoring therapy of e.g. rheumatoid arthritis, comprises immobilized gene sequences from monocyte-macrophage 127 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 186 67 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACCACGCAAGCACCACGCG .; 0 Sequence 930 BP; 242 A; 208 C; 206 G; 245 T; 0 U; 29 Other; 2.0%; Score 74; DB 9; Length 930; 67.5%; Pred. No. 7.4e-11; 50; Indels GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460 187 gargiracagcccagaragcrcrrcagccrgcac 220 0; Mismatches Claim 29; SEQ ID NO 121; 180pp; German. Matches 104; Conservative Local Similarity

```
This invention relates to a combination comprising several CDNAs that are disflerentially expressed in activated vascular tissue. The invention also discloses a high throughput method for detecting differentially expressed companies. The cDNAs of the invention may have antiarteriosclerotic; cytostatic; cardiant; hypotensive; antidiabetic; cynaecological; vasotropic and cerebroprotective activities and may be used in gene therapy. The CDNAs of the invention may be used in gene therapy. The CDNAs of the invention may be used in a sample, or screening several molecules or compounds to identify a molecule or compound that specifically binds to compend to more compended to a compounds to identify a ligand that specifically binds to the protein, or to produce or purify an antibody to the protein that can be used to detect a protein in a sample. The nucleotides may be useful for recombinant protein from a sample. The nucleotides may be useful for diagnosing, treating, or monitoring the progression of treatment of a vascular disease, e.g. atherosoclerosis, cancer, coronary artery disease, hypertension, diabetes, pre-eclampsia, ischaemia reperfusion confusion, or stroke. The CDNAs can also be used for large-scale conjury, restension, diabetes, pre-eclampsia, ischaemia reperfusion conjury, restension, diabetes, pre-eclampsia, or acute diseases can especiated with abnormalities in the expression, amount or acute diseases associated with abnormalities in the expression, amount or distribution of the protein. The present sequence represents a cDNA of the invention content in the present sequence represents a cDNA of the invention content and all all and all and all a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            hypotensive; antidiabetic; gynaecological; vasotropic; cerebroprotective; gene therapy; vascular disease; cancer; coronary; artery disease; hypertension; diabetes; pre-eclampsia; restenosis;
                                                                                            vascular tissue; cytostatic; atherosclerosis; cardiant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Combination for diagnosing, staging, treating, or monitoring the progression of treatment of a vascular disease, e.g. atherosclerosis, comprises several cDNAs that are differentially expressed in activated
                                           Human cDNA #836 differentially expressed in activated vascular tissue.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ouery Match 2.0%; Score 74; DB 7; Length 972; Best Local Similarity 67.5%; Pred. No. 7.6e-11; Matches 104; Conservative 0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 972 BP; 265 A; 228 C; 252 G; 227 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  http.seqdata.uspto.gov/sequence.html?DocID=20020137081
                                                                                                                                                                                                ischaemia-reperfusion injury; stroke
                                                                                                                                                                                                                                                                                                                                                                                                                                           28-JUL-2000; 2000US-0222469P. 08-JAN-2001; 2001US-0260483P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 1; Page; 18pp; English.
                                                                                                                                                                                                                                                                                                                                                                                            08-JAN-2002; 2002US-00044090.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2003-110597/10.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (BAND/) BANDMAN O.
                                                                                               Human; gene; 88;
                                                                                                                                                                                                                                                                                                US2002137081-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             vascular tissue.
                                                                                                                                                                                                                                                                                                                                              26-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bandman O;
                                                                                                                                                                                                                                                    Homo
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
```

```
Search completed: April Job time: 1407.42 secs
   d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                     262 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 321
                                                                                                                                                                                                                                                                                                                                                                     stomach, lung, prostate, panoreas, carcinoma, antitumour, cancerous, cytostatic, gene therapy, antineoplastic, Wilm's tumour, adenocarcinoma,
                                                                                                                                                                                                                                                                                                                                                      Human; cancer; colon; breast; ovary; oesophagus; kidney; thyroid;
                                                                                                                                                                                                                                                                                                                  Lung cancer related gene sequence SEQ ID NO:4849.
                                                                      1427 GAIGIGCTTACCCAGGITAAGCTTCAGTCTGTAC 1460
                                                                                                 ABL66512 standard; DNA; 1026 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000US-0235077P.
2000US-023508P.
2000US-02358B0P.
2000US-02358B0P.
2000US-02358BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20000S-0233133P.
2000US-0233133P.
2000US-0234009P.
2000US-023405P.
2000US-0234509P.
2000US-0234567P.
2000US-0234567P.
2000US-0234567P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2000US-0237172P.
2000US-0237173P.
2000US-0237278P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000US-0237606P.
2000US-0237608P.
2000US-0244867P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-MAY-2001; 2001WO-US010838
                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO200194629-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    22-SEP-2000; 22-SEP-2000; 25-SEP-2000; 25-SE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                02-OCT-2000; 2
02-OCT-2000; 2
02-OCT-2000; 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25-SEP-2000;
25-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-SEP-2000;
26-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28-SEP-2000;
28-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            05-JUN-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27-SEP-2000;
28-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      02-OCT-2000;
02-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25-SEP-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28-SEP-2000;
                                                                                                                                                                                                                                                                             15-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     13-DEC-2001
                                                                                                             322
                                                                                                                                                                                                                                         ABL66512;
                                                                                                                                                                                                                                                                                                                                                                                                        gene; ds.
                                                                                                                                                                RESULT 15
                                                                                                                                                                                 ABL66512
                                  g
                                                                        à
```

· 0

1, 2004, 13:40:08

```
The present invention describes a method (M1) for screening for an anti-
neoplastic agent. The method involves exposing cells to a chemical agent
to be tested for anti-neoplastic activity, determining a change in
comprises a sequence (S) selected from 847 sequences (given in ABL61664
comprises a sequence (S) selected from 847 sequences (given in ABL61664
comprises a sequence (S) selected from 847 sequences (given in ABL61664
comprises a sequence (S) selected from 847 sequences (I)
comprises a sequence (S) selected from 847 sequences (Given in ABL61664
comprises a sequence (S) selected from 847 sequences (I)
activity and can be used in the neceplastic activity. (I) has cytostatic
activity and can be used in gene therapy. MI can be used for screening an
anti-neoplastic agent, and can be used for producing a product which is
the data collected with respect to the anti-neoplastic agent as a result
of MI, and the data is sufficient to convey the chemical structure and/or
properties of the agent. MI can be used in the treatment of cancer such
as colon, breast, stomach, lung, thyroid, oesophageal, ovarian, kidney,
prostate or pancreatic cancer, adenome, clear cell
cancer, infiltrating ductal cancer, infiltrating lobular cancer, squamous
cell carcinoma, neuroendocrine carcinoma, papillary carcinoma and Milm's
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1367 ACTTAIGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  113 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACACGCAAGCACGACGCG 172
                                                                                                                                                                                                                                                                                                                                                                                 Screening for anti-neoplastic agent involves exposing cells to a chemical agent to be tested for anti-neoplastic activity, and determining a change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     173 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG
                                                                                                                                                                      Horrigan S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 1026;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 1026 BP; 283 A; 216 C; 245 G; 282 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50; Indels
                                                                                                                                                                      Endress G,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in expression of a gene of a signature gene set.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 74; DB 6;
Pred. No. 7.9e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            233 GATGITACAGCCCAGATAGCTCTTCAGCCTGCAC 266
                                                                                                                                                                      Ebner R,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 1; SEQ ID NO 4849; 44pp; English.
                                                                                                                                                                      Carter KC,
01-NOV-2000; 2000US-0245084P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.0%
Dest Local Similarity 67.5%
Matches 104, Conservative
                                                                                                                                                                      Augustus M,
Weaver Z;
                                                                                   (AVAL-) AVALON PHARM
                                                                                                                                                                                                                                                                                                 WPI; 2002-188264/24.
                                                                                                                                                Young PE, I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1427
```

This Page Blank (uspto)

```
April 1, 2004, 12:34:16; Search time 1266.68 Seconds (without alignments) 10723.022 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                       1 tcctgttgataatctttcta.....aagagcttgaaccattgtag 3632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Published Applications NA:*

1. /cgn2_6/ptodata/1/pubpna/US07_PUBCOMB.seq:*
2. /cgn2_6/ptodata/1/pubpna/PCT_NEW_PUB.seq:*
3. /cgn2_6/ptodata/1/pubpna/US06_UNEW_PUB.seq:*
4: /cgn2_6/ptodata/1/pubpna/US06_UNEW_PUB.seq:*
5: /cgn2_6/ptodata/1/pubpna/US07_NEW_PUB.seq:*
6: /cgn2_6/ptodata/1/pubpna/US08_NEW_PUB.seq:*
7: /cgn2_6/ptodata/1/pubpna/US08_NEW_PUB.seq:*
8: /cgn2_6/ptodata/1/pubpna/US08_PUBCOMB.seq:*
9: /cgn2_6/ptodata/1/pubpna/US08_PUBCOMB.seq:*
11: /cgn2_6/ptodata/1/pubpna/US08_PUBCOMB.seq:*
11: /cgn2_6/ptodata/1/pubpna/US08_NEW_PUB.seq:*
12: /cgn2_6/ptodata/1/pubpna/US08_PUBCOMB.seq:*
13: /cgn2_6/ptodata/1/pubpna/US08_PUBCOMB.seq:*
14: /cgn2_6/ptodata/1/pubpna/US10A_PUBCOMB.seq:*
15: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
15: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
16: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
17: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
18: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
18: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
18: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
18: /cgn2_6/ptodata/1/pubpna/US10B_PUBCOMB.seq:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2465228 seqs, 1869859620 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                           - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IDENTITY NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Minimum DB seq length: 0 Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                        US-09-727-855B-1
3632
                                                                                                                                                                                                                                                                                                                                                               Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                           OM nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Searched:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

Sequence 3, Applisequence 13. Applisequence 13503, Applisequence 1822, Applisequence 1905, Applisequence 120, Applisequence 127, Applisequence 13787, Applisequence 11, Applisequence 709, Applisequence 709, Applisequence 709, Applisequence 6, Applisequence 709, Applisequence 6, Applisequence 709, Applisequence 6, Applisequence 709, Sequence 1, Appli Sequence 4, Appli Description 4 US-10-109-670-3 3 US-10-044-090-836 4 US-10-198-846-13503 4 US-09-954-456-1822 2 US-10-342-887-1905 2 US-10-342-887-1905 0 US-09-971-800A-1627 4 US-09-917-800A-1627 US-09-993-333-11 US-09-960-352-14744 US-10-044-090-709 US-09-727-855B-6 US-09-727-855B-1 US-09-727-855B-4 Query Match Length DB 492 100.0 Score 3632 151.4 84.2 72.6 71 69.8 4 4 4 4 4 4 4 6 E Result No.

Seguence 25, Appl	Sequence 122, App	Sequence 24298, A	Sequence 4, Appli	Sequence 3227, Ap	Sequence 1, Appli	Sequence 1, Appli	Sequence 29, Appl	Sequence 2, Appli	Seguence 267, App	Sequence 90403, A	Sequence 1077, Ap	Sequence 715, App	Sequence 1059, Ap	Sequence 23123, A	Sequence 32727, A	Sequence 32727, A	Sequence 67, Appl	Sequence 16177, A	Sequence 9423, Ap	Sequence 90405, A	Sequence 13, Appl	Sequence 6456, Ap	Sequence 5724, Ap	Sequence 5493, Ap	Sequence 294, App	2105,	Sequence 9, Appli	Sequence 4529, Ap	Sequence 11115, A
5 US-10-320-797-25	14 US-10-247-671-122	0 US-09-918-995-24298	4 US-10-109-670-4	US-09-738-626-3227	US-09-818-564-1	9 US-09-738-626-1	4 US-10-109-670-29	US-09-727-855B-2	2 US-10-342-887-267					4 US-10-029-386-23123		5 US-10-242-535A-32727	US-09-920-455-67		4 US-10-029-386-9423		US-09-960-352-13	US-09-960-352-6456	US-09-960-352-5724	US-09-960-352-5493	5 US-10-310-154-294	1 US-09-864-408A-2105	4 US-10-230-331-9	US-09-960-352-4529	US-09-960-352-11115
2809 1	894 1	344 1	812 1	6 009	1143 9	3309400	630 1	3375 9		2217 12		6004 10	6004 10	Н	۲	Н	376 9		598 14		381 9	412 9	413 9	425 9	1295 1	344 13	732 14	264 9	330 9
1,9	1.9	1.9	1.8	1.8	1.8	1.8		1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	7.4	1.4	1.4	1.4	1.4	1.4	1.4
68.6	68.2	67.8	66.2	65.2	65.2	65.2	63.6	60.8	60.4	59	56.8	56.8	56.8	55.8	55.8	55.8	55.8	55.8	55.8	55.8	52.6	52.6	52.6	52.6	52.6	51.8	51.8	51	51
c 16	17	18	19	20	21	22	23	24	25	56	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
J														O					О	O		U	O					U	J

ALIGNMENTS

RESULT 1
US-09-727-855B-1
i Sequence 1. Application US/09727855B
Fatent No. US20020168703A1
GENERAL INFORMATION:
APPLICANT: HOSHING, Tatsuo
APPLICANT: SETOGUCHI, Yutaka
TITLE OF INVENTION: PROCESS FOR THE MANUFACTURE OF CAROTENOIDS AND BIOLOGICALLY USEFUI
TITLE OF INVENTION: MATERIALS THEREOF
FILE REFERENCE: C38435/111694
CURRENT APPLICATION NUMBER: US/09/727,855B
CURRENT FILING DATE: 2000-12-01
NUMBER OF SEQ ID NOS: 17 ö 61 CAAACTIAGIGITGGICGCAIGGACGGICTICGGAICCAGAACTGACGGCICGCCAAIAA 120 61 CAAACTTAGTGTTGGTCGCATGGACGGTCTTCGGATCCAGAACTGACGGCTCGCCAATAA 120 121 AGTATGACGATGGTAGAGGTGAAGGAGGGAACCACGGTTGACCAGTCCAAAGAGGTGCT 180 09 181 GATGTGCGCGAGGATTTGTCATTAAATGGTGTTGTATATGCTAGAGGCCAAGAGAAGACAT 240 09 1 TCCTGTTGATAATCTTTCTAACGCCTTGTACTTTGACCAAGGCGTTTGTCCGAAATTTTG 121 AGTATGACGATGGTAGAGGTGAAGGAGGAACCACAGGTTGACCAGTCTCAAAGAGTGCT TCCTGTTGATAATCTTTCTAACGCCTTGTACTTTGACCAAGGCGTTTGTCCGAAATTTTG Gaps 0; 100.0%; Score 3632; DB 9; Length 3632; 100.0%; Pred. No. 0; rive 0; Mismatches 0; Indels 0; ; TYPE: DNA ; ORGANISM: Phaffia rhodozyma US-09-727-8558-1 Query Match
Best Local Similarity 100.(
Matches 3632; Conservative LENGTH: 3632 q ਨੇ qq ò d δ ð

5 A 5

131 CONTINUADA CANDA CAN
8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6
181 difficielle del

8 8 8 8 8 8 8 8 8 8 8 8 8

ठे qq ŏ g ò g δ 임 g

 $\stackrel{\triangleright}{\sigma}$

g

```
RESULT 2
US-09-727-855B-4
US-09-727-855B-4
Squence 4, Application US/0972785B
Squence 100 US/0972001
Squence 100 US/00 U
3541 ATGAGATGTCAGGATGCTTGCTTCACTGTAGATGGAGGAAGAAGATATGCGAAGAAGGA 3600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGACTTATGTTAACGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGG 1424
                                                                                                         ATGAGATGTCAGGATGCTTGCTTCACTGTAGATGGAGGAAGAAGATATGCGAAGCAAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1305 AGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         110 ATGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     170 AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-109-670-3

US-10-109-670-3

Sequence 3, Application US/10109670

Publication No. US20030105283A1

GENERAL INFORMATION:

APPLICANT: TAKESAKO, KAZUTOH et al.

TITLE OF INVENTION: TAKESAKO, RAZUTOH et al.

TITLE OF INVENTION: 1422-0523P

CURRENT APPLICATION NUMBER: US/10/109,670

CURRENT FILING DATE: 2002-04-01

SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9; Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4.2%; Score 151.4; DB 9.99.3%; Pred. No. 9.7e-36; live 0; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                     3601 ATACACTTTGGAAAGAGCTTGAACCATTGTAG 3632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                230 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 262
                                                                                                                                                                                                                       ATACACTTTGGAAAGAGCTTGAACCATTGTAG 3632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       G or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ú
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          = A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
ORGANISM: Malassezia furfur
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA
ORGANISM: Phaffia rhodozyma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: CDS
; LOCATION: (1)..(666)
; OTHER INFORMATION: n or X
US-09-727-855B-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 152; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURE:
NAME/KEY: misc_feature
LOCATION: (1)..(728)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 669
                                                                                                         3541
                                                                                                                                                                                                                     3601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1425
3481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                     g
                                                                                                      δ
                                                                                                                                                       Ωp
                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3180
                       2460
                                                                           2460
                                                                                                                                                                                                                                               TAACGACATATGAAGGGAGGATCAAATATCGTTTCTTCATAAACAACTTTCGAGGCAGAT 2580
                                                                                                                                                                                                                                                                                                                                                              2640
                                                                                                                                                                                                                                                                                                                                                                                                                  2640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGAAGAGATTGAGAGATCAAGCCCGGTCATCTGATGTCGAACAAAAACATGCCCTGGTCTGC 2760
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTTCCACTTCTTGTACTCCTCAACGTTGACGAAGATGACGAAGCAGTCGGTGGCCTTAGC 3480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGCTCAAGTCAACTCACATGTCTTTGGCGGTACCGAAGACGTTCTCAAGCTGCTGCTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCGATGAAAAGCATGAAGATATTAGCTATCGGCGCGATAAAAGTGTGACGAGAAAAT
                                                             2401 ACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTGCTGTTTGGTCCG
                                                                                                                                                                      TTATCAACTACAAGGAGGCCCGATTGCAGGCTGCTCTCTAAGCGGGACGAAAAG
                                                                                                                                                                                                                                                                                        TAACGACATATGAAGGGAGGATCAAATATCGTTTCTTCATAAACAACTTTCGAGGCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAACAGTTTCTAGCACATTATGACCATGTTCATGTGAAATTGGGAAATGAGCCAGAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTTTATTATCTAATTCATGATTCATGCGACTATGGATACATATGGGATTTCCAGAACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2881 ACAGATGCAACAAAGGCACGCCATTTTCCAAAGATCGACTCCTCCCACAAGTATGCGGCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGTTTGTTGTTAAGAGATATAAAAGCAGACGACAAAACAAATCGTTTATCGACCCTGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCAACACCGTGACCGTTTGACGAGTTGGTAGAGTTGTTGTTGTTGTTGTTCAAAGGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TCCAGACTGGACGCTTCCAAGCTTCAACAACTTCTCGGCAGCGTCGCTGTTCGGGAAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        rccadactideacderrccaagerrcaactrercegeagecererregeagaaag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGAGAAAAGATGATTCGCACCATCGACCTCGACCAAAGGAATGGAGGTGTCACCGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTTCCACTTCTTGTACTCCTCAACGTTGACGAAGATGACGAAGCAGTCGGTGGCCTTAGC
                    ACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTGCTGTTTGGTCCG
                                                                                                                                   TTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTCTCTAAGCGGGGACGAAAAG
                                                                                                                                                                                                                                                                                                                                                           GGGAGAGTACGTACAAGAGGTTTGTATGGAGAATTGAGTTTGTTGACGGTTAGCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGAAGAGATTGAGAGATCAAGCCCGGTCATCTGATGTCGAACAACATGCCCTGGTCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GITTATTATCATTCATTCATCATGCGACTATGGATACATATGGGATTTCCAGAACAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACAGATGCAACAAAGCACGGCATTTTCCAAAGATCGAGTCCTCCCACAAGTATGCGGCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGCTCAAGTCAACTCACATGTCTTTGGCGGTACCGAAGACGTTCTCAAGCTGCTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAGCTTTTCCGAGCTTGCCAGTAGGTCCCTGGTTGGAGAAGAAGATGTCGAAGGCTAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAGCTTTTCCGAGCTTGCCAGTAGGTCCCTGGTTGGAGAAGAAGATGTCGAAGGCTAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCGATGAAAAGCATGAAGATATTAGCTATCGGCGCGATAAAAGTGTGACGAGATGAAAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGAGAAAAGATGATTCGCACCATCGACCTCGACCAAAGGAATGGAGGTGTCACCGGC
                                                                                                                                                                                                                                                                                                                                                                                                            GGGAGAGTACGTACAAGAGGTTTGTATGGAGAATTGAGTTTGTTGACGGTTAGCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAAAGGCAAAAAGGAACAGAGCGATAAGCATATGTGATTCTCTACTTCTTATAGGCTCTT
                    2401
                                                                                                                                                                                       2461
                                                                                                                                                                                                                                            2521
                                                                                                                                                                                                                                                                                                   2521
                                                                                                                                                                                                                                                                                                                                                                                                               2581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3421
                                                                                                                                2461
                                                                                                                                                                                                                                                                                                                                                           2581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3181
```

Db

음 à

 δ

qq

ò Op à qq ð g $\stackrel{>}{\circ}$

ŏ

рp

g

ð

qq δ qq ò qq

ò

ö

169

Gaps

0;

Length 996;

```
1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                       1367 ACTIATGITAACGGCCICAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                      199 eccendenacercacarchaedececasarcarecaderecaceaceaceaseaseace
                                                                                                                                                                                                                                                           Score 74; DB 14; Length 99
Pred. No. 2.1e-11;
0; Mismatches 50; Indels
  PRIOR APPLICATION NUMBER: 60/306,220
PRIOR FILING DATE: 2001-07-18
NUMBER OF SEQ ID NOS: 14084
SEQ ID NO 13503
LENGTH: 996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Patentin version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 2.0%;
Best Local Similarity 67.5%;
                                                                                                                                                                                                                                                              Query Match 2.0%;
Best Local Similarity 67.5%;
                                                                                                                                                                                                                                                                                          Best Local Similarity 67.5
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
CORGANISM: Homo sapiens
US-09-954-456-1822
                                                                                                                                                                                         ; ORGANISM: Homo sapiens
US-10-198-846-13503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 6
US-09-954-456-1822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 1822
                                                                                                                                                                 TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                            \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ਨੇ
                                                                                                                                                                                                                                                                                                                                                             ö
; CTHER INFORMATION: Strandedness:double-Topology:linear-Molecule Type:cDNA to mRNA
US-10-109-670-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Olga Bandman
TITLE OF INVENTION: GENES DIFFERENTIALLY EXPRESSED IN VASCULAR TISSUE ACTIVATION
FILE REFERENCE: PA-0028 US
CURRENT APPLICATION NUMBER: US/10/044,090
CURRENT FILING DATE: 2002-01-09
NUMBER OF SEQ ID NOS: 850
SOFTWARE: PERL PROGRAM
SEQ ID NO 816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                        ö
                                                                                                                                                                                         1305 AGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATC 1364
                                                                                                                                                                                                                                                                                        1365 AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGG 1424
                                                                                                                                                                                                                                       50 Arddecrickadecerrrarcreraacakarcarcarcaccaccaccaccaccaccaccacc
                                                                                                                                                                                                                                                                                                                                   110 AGACCTACGTGAACAACCTCAACGCCGCGAGAAGGCGTACGCTGAGGCGACGGCGCGCGA 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 262 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     202 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACGCAAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCACGAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Gaps
                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Xu, Yongyao
APPLICANT: Wang, Youzhen
TITLE OF INVENTION: NOVEL GENES, COMPOSITIONS, KITS, AND METHODS
TITLE OF INVENTION: FOR IDENTIFICATION, ASSESSMENT, PREVENTION, AND
TITLE OF INVENTION: THERAPY OF BREAST CANCER
FILE REPERENCE: MEL-049
CURRENT APPLICATION NUMBER: US/10/198,846
CURRENT FILING DATE: 2002-07-18
                                                                                                                                        6
                                                                                       Length 728;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 2.0%; Score 74; DB 13; Length 97:
Best Local Similarity 67.5%; Pred. No. 2.1e-11;
Matches 104; Conservative 0; Mismatches 50; Indels
                                                                                    Score 84.2; DB 14; Length Pred. No. 1.1e-14; 0; Mismatches 43; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; OTHER INFORMATÎON: Incyte ID No. US20020137081A1 010001CB1
US-10-044-090-836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1427 GAIGIGCITACCCAGGITAAGCITCAGICIGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                       1425 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              322 dargracacccadaragererreadecerdeae 355
                                                                                                                                                                                                                                                                                                                                                                                                                                  1.70 accacciócitrascacacarccacicacacació 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 13503, Application US/10198846 Ublication No. US20030099974A1 GENERAL INFORMATION: APPLICANT: Lillie, James
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Sequence 836, Application US/10044090; Publication No. US20020137081A1; GENERAL INFORMATION:
                                                                                    2.3%;
ilarity 71.9%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature
                                                                                  Query Match
Best Local Similarity
Matches 110; Conserva
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
US-10-198-846-13503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 4
US-10-044-090-836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                          à
```

```
APPLICANT: Young, Paul
TITLE OF INVENTION: Process for Identifying Anti-Cancer Therapeutic Agents Using Cance
TITLE OF INVENTION: Sets
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
259 GCCTACGTGAACATCGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             113 gecerigaacercacareaceeecaaareareareareacereeacereeacaacaacaacaacaacaacaa 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ·
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1026;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 74; DB 9; Length 102
Pred. No. 2.2e-11;
0; Mismatches 50; Indels
                                                                                                                     1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                319 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE REPERENCE: 689290-76
CURRENT APPLICATION NUMBER: US/09/954,456
CURRENT PILING DATE: 2001-09-18
PRIOR APPLICATION NUMBER: US/60/233,617
PRIOR APPLICATION NUMBER: US/60/233,617
PRIOR FILING DATE: 2000-09-26
PRIOR FILING DATE: 2000-09-25
PRIOR FILING DATE: 2000-09-25
PRIOR APPLICATION NUMBER: US/60/235,134
PRIOR APPLICATION NUMBER: US/60/235,134
PRIOR APPLICATION NUMBER: US/60/235,134
PRIOR APPLICATION NUMBER: US/60/235,134
PRIOR FILING DATE: 2000-09-26
PRIOR FILING DATE: 2000-09-27
PRIOR APPLICATION NUMBER: US/60/235,710
PRIOR FILING DATE: 2000-09-27
PRIOR APPLICATION NUMBER: US/60/235,840
PRIOR FILING DATE: 2000-09-27
PRIOR FILING DATE: 2000-09-27
PRIOR APPLICATION NUMBER: US/60/235,840
PRIOR FILING DATE: 2000-09-27
PRIOR PRIOR FILING DATE: 2000-09-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1822, Application US/09954456
Patent No. US20020115057A1
GENERAL INFORMATION:
```

```
Query Match
Best Local Similarity 67.5%;
Matches 104; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity 67.5°
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
CORGANISM: Homo sapiens
US-10-342-887-1905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ ID NO 22
LENGTH: 1067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
1367 ACTIATGTTAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1307 GCCCTGGAGCCCTCCATGTCCAAGGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1367 ACTIATGTTAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  172
                                                                         173 GCCTACGTGAACAACCTGAACGTCACCGAGGAAGTACCAGGAGGCGTTGGCCAAGGGA 232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             173 Géctiac grada de la contra del la contra della contra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      113 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACACCACAAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Bernards, Rene
TITLE OF INVENTION: Diagnosis and Prognosis of Breast Cancer Patients
FILE REFERENCE: 9301-188-999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: Diagnosis and Prognosis of Breast Cancer Patients FILE REFERENCE: 9301-188-999 CURRENT APPLICATION NUMBER: US/10/342,887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 74; DB 12; Length 1026;
Pred. No. 2.2e-11;
0; Mismatches 50; Indels
                                                                                                                                                      1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1427 GAIGIGCITACCCAGGITAAGCITCAGICIGIAC 1460
                                                                                                                                                                                                                               233 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   śardracacccadaraccrerreaccerecae 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/342,887
CURRENT FILING DATE: 2003-01-15
PRIOR APPLICATION NUMBER: 60/298,918
PRIOR PILING DATE: 2001-06-18
PRIOR PLILING DATE: 2002-06-18
PRIOR PILING DATE: 2002-05-14
PRIOR FILING DATE: 2002-06-14
PRIOR FILING DATE: 2002-06-14
NUMBER OF SEQ ID NOS: 2699
SEQ ID NO 509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1905, Application US/10342887
Publication No. US20040058340A1
GENERAL INFORMATION:
APPLICANT: Dai, Hongyue
APPLICANT: He, Yudong
APPLICANT: Linaley, Peter S.
APPLICANT: Roberts, Christopher J.
APPLICANT: Roberts, Christopher J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Mao, Mao Applicant: Roberts, Christopher J. APPLICANT: Van de Vijver, Marc J. APPLICANT: Nan de Vijver, Marc J. APPLICANT: Pernards, Rene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Van 't Veer, Laura Johanna
Van de Vijver, Marc J.
Bernards, Rene
                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 509, Application US/10342887
Publication No. US20040058340A1
GENERAL INFORMATION:
APPLICANT: Dai, Hongyue
APPLICANT: He, Yudong
APPLICANT: Linsley, Peter S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 67.5%;
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA
CORGANISM: Homo sapiens
US-10-342-887-509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 8
US-10-342-887-1905
                                                                                                                                                                                                                                                                                                                                                                                         US-10-342-887-509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       233
                                                                         d
                                                                                                                                                                                                                       g
                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
```

```
1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 173 GCCTACGTGAACAACCTGAACGTCACCGAGGAGGAAGTACCAGGAGGCGTTGGCCAAGGGA 232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            332 GCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        113 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACCACAAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                              DB 12; Length 1026;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 74; DB 10; Length 1067;
Pred. No. 2.2e-11;
0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ) NAME/KEY: misc feature
; OTHER INFORMATION: Incyte ID No. US20030175704A1 241107.19
US-09-971-429B-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 9
US-09-971-429B-22
Sequence 22, Application US/09971429B
Sequence 22, Application US/09971429B
Publication No. US20030175704A1
GENERAL INFORMATION:
APPLICANT: Lasek, Amy K. W.
APPLICANT: Shyjan, Andrew W.
TITLE OF INVENTION: GENES EXPRESSED IN LUNG CANCER;
FILE REPERENCE: PA-0040 US
CURRENT APPLICATION NUMBER: US/09/971,429B
CURRENT FILING DATE: 2001-10-04
PRIOR PILING DATE: 2000-04-10
NUMBER OF SEQ ID NOS: 56
SOSTWARE: PERL PROGRAM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1427 GAIGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                        Score 74; DB 12;
Pred. No. 2.2e-11;
0; Mismatches 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             233 GADGITACAGCCCAGATAGCTCTTCAGCCTGCAC 266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           392 GAIGITACAGCCCAGATAGCTCTTCAGCCTGCAC 425
CURRENT FILING DATE: 2003-01-15

PRIOR PEDELORION NUMBER: 60/298,918

PRIOR FILING DATE: 2001-06-18

PRIOR APPLICATION NUMBER: 60/380,710

PRIOR PILING DATE: 2002-05-14

PRIOR PILING DATE: 2002-05-14

PRIOR PILING DATE: 2002-06-14

NUMBER OF SEQ ID NOS: 2699

SEQ ID NO 1905

LENGTH: 1026
                                                                                                                                                                                                                                                                                                                                                                                           2.0%;
```

```
CURRENT APPLICATION NUMBER: US/10/198,846
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 13
US-09-960-352-14744
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-993-333-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-993-333-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1367 ACTIVATGITAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         237 accriacificalacida de concencia de constante de const
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 13787, Application US/10198846

Publication No. US20030099974A1

GENERAL INFORMATION:

APPLICANT: Lillie, James

APPLICANT: Ku, Yongyao

APPLICANT: Steinmann, Kathleen

APPLICANT: Steinmann, Kathleen

APPLICANT: FOR IDENTIFICATIONS, KITS, AND METHODS

TITLE OF INVENTION: FOR IDENTIFICATION, ASSESSMENT, PREVENTION, AND

TITLE OF INVENTION: THERAPY OF BREAST CANCER

FILE REFERENCE: MRI-049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; OTHER INFORMATION: Genbank Accession No. US20020119462A1 NM_017051Us-09-917-800A-1627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
2.0%; Score 74; DB 9; Length 1492;
Best Local Similarity 67.5%; Pred. No. 2.9e-11;
Matches 104; Conservative 0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Johnson, Kory
APPLICANT: Gastle, Arthur
APPLICANT: Gastle, Arthur
APPLICANT: Gastle, Arthur
APPLICANT: Gane Logic, Inc.
TITLE OF INVENTION: Molecular Toxicology Modeling
FILE REPRENEUE: 44921-5038-US
FILE REPRENEUE: 44921-5038-US
CURRENT FILING DATE: 2001-07-31
PRIOR APPLICATION NUMBER: US 60/222,040
PRIOR FILING DATE: 2000-107-31
PRIOR FILING DATE: 2000-11-02
PRIOR FILING DATE: 2001-16-11
PRIOR PRILING DATE: 2001-16-11
PRIOR FILING DATE: 2001-05-15
PRIOR FILING DATE: 2001-06-16
PRIOR FILING DATE: 2001-06-17
PRIOR FILING DATE: 2001-06-19
PRIOR FILING DATE: 2001-06-06
PRIOR FILING DATE: 2001-06-06
PRIOR FILING DATE: 2001-06-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     297 GATGTTACAACTCAGGTTGCTCTTCAGCCTGCAC 330
                                                                                                        Sequence 1627, Application US/09917800A Patent No. US20020119462A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Rattus norvegicus
                                                                                                                                                                                                                 GENERAL INFORMATION:
APPLICANT: Mendrick, Donna
APPLICANT: Porter, Mark
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-198-846-13787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGIH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
```

```
GENERAL INFORMATION:

APPLICANT: Oberley, Larry Wayne
APPLICANT: Oberley, Larry Wayne
APPLICANT: Smith, Benjamin Barnes
TITLE OF INVENTION: Oligonucleotides
TITLE OF INVENTION: Oligonucleotides
FILE REFERENCE: 875.04203.
CURRENT APPLICATION NUMBER: US/09/993,333
CURRENT FILING DATE: 2001-11-14
PRIOR APPLICATION NUMBER: US 60/248,328
PRIOR FILING DATE: 2000-11-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1367 ACTIAIGIIAACGGCCTCAACGCTGCCGAGGAGAGCIACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      209 gecriaccigaacaaccicaacgicaccdaagaagaagiaccaggaggggigaiggccaagga 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               149 eccenéga a cerca carica a cecesa de rentera en esta con casa de casa esta esta en esta en esta en esta esta en est
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 2825;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 325;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 73; DB 9; Length 325
Pred. No. 1.8e-11;
0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1427 GAIGIGCITACCCAGGITAAGCTICAGICIGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTA 1459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           378 GATGTTACAGCCCÁGATAGCTCTTCAGCCTGCAC 411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 74; DB 14;
Pred. No. 4.7e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       269 darginacagcccadanagcrcricadccrcca 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Mismatches
CURRENT FILING DATE: 2002-07-18
PRIOR APPLICATION NUMBER: 60/306,220
PRIOR FILING DATE: 2001-07-18
NUMBER OF SEQ ID NOS: 14084
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 13787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 12
SOFTWARE: PastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 14744, Application US/09960352; Patent No. US20020137139A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 11, Application US/09993333 Patent No. US20020156040A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 2.0
Best Local Similarity 67.5
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 103; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                  , ORGANISM: Homo sapiens
US-10-198-846-13787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
```

```
Search completed: April 1, 2004, 14:10:44 Job time : 1277.68 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2509 C 2509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C 593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        П
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
               APPLICANT: Warren, Wesley C.
APPLICANT: Tao, Nengbing
APPLICANT: Tao, Nengbing
APPLICANT: Byatt, John C.
APPLICANT: Byatt, John C.
APPLICANT: Byatt, John C.
TITLE OF INVENTION: NUCLEIC ACID AND OTHER MOLECULES ASSOCIATED WITH LACTATION AND
TITLE OF INVENTION: MUSCLE AND FAT DEPOSITION
FILE REPRESENCE: 16511.006/37-21 (10298) C.
CURRENT APPLICATION NUMBER: US/09/960,352
CURRENT FILING DATE: 2001-09-24
NUMBER OF SEQ ID NOS: 15112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 709, Application US/10044090
Publication No. US20020137081A1
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Olga Bandman
TITLE OF INVENTION: GENES DIFFERENTIALLY EXPRESSED IN VASCULAR TISSUE ACTIVATION
FILE REFERENCE: PA-0028 US
CURRENT APPLICATION NUMBER: US/10/044,090
CURRENT FILING DATE: 2002-01-09
NUMBER OF SEQ ID NOS: 850
SOFTWARE: PERL PROGram
SEQ ID NO 709
LENGTH: 2208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1367 ACTIATGITAACGGCCTCAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1310 CTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACT 1369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               217 GCCTACGTGAACCACCTCAACGTCGCCGAGGAAGTACCGGGAGGCGCTCGAAGGT 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              117 CIGGAACCICACAICAACGCGCAGAICAIGCAGCTGCACCAGCAAGCACCACGCGCGC 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       177 TACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGT 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 157 GCCCTGGAGCCGCACATCAACGCGCAGATCATGCAGCTGCACCACACAAGCAACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1370 TATGTTAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           · 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 2.0%; Score 72.6; DB 9; Length 424; Best Local Similarity 67.5%; Pred. No. 3e-11; Matches 102; Conservative 0; Mismatches 49; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.0%; Score 71; DB 13; Length 2208;
66.9%; Pred. No. 3.48-10;
tive 0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: misc_feature
OTHER INFORMATION: Incyte ID No. US20020137081A1 241107.13
                                                                                                                                                                                                                                                                                                                         TYPE: DNA ORGANISM: Bos taurus OTHER INFORMATION: Clone ID: 63-LIB3057-022-Q1-K1-H4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1430 GIGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     277 dardracagercadaragerereres
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          237 GTTACAGCCCAGATAGCTCTTCAGCCTGCAC 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 2.0
Best Local Similarity 66.9
Matches 101; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA ORGANISM: Homo sapiens FEATURE:
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                  US-09-960-352-14744
                                                                                                                                                                                                                                                                       SEQ ID NO 14744
LENGTH: 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 14
US-10-044-090-709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-044-090-709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        \delta
```

```
THE MANUFACTURE OF CAROTENOIDS AND BIOLOGICALLY USEFUI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2449 CTGTTTGGTCCGTTATCAACTACAAGGGGCAGAGGCCCGATTGCAGGCTGCTCTCTAAG 2508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2389 AGAICTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      473 ACATCTGGGAGCACGCTTTCTACCTCCAGTACAAGAATGTCAAGCCTGATTACCTTGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    533 CTTTCTGGAACGTCTGCAACTTTGCTGAGGCTCAGCGAAGGTTTGATGCTGCTGTCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 69.8; DB 9; Length 597;
Pred. No. 2.9e-10;
0; Mismatches 32; Indels (
                                            APPLICANT: HOSHINO, Tatsuo
APPLICANT: HOSHINO, Tatsuo
APPLICANT: HOSHINO, Tatsuo
APPLICANT: SETOGUCHI, Yutaka
TITLE OF INVENTION: PROCESS FOR THE MANUFACTU
TITLE OF INVENTION: PROCESS FOR THE MANUFACTU
TITLE OF INVENTION: MATERIALS THEREOF
FILE REFERENCE: C38435/111694
CURRENT APPLICATION NUMBER: U$(09/727,855B
CURRENT FILING DATE: 2000-12-01
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin version 3.1
SEQ ID NO 6
LENGTH: 597
Sequence 6, Application US/09727855B Patent No. US20020168703A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ch
l Similarity 73.6%;
89; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Phaffia rhodozyma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; LOCATION: (1)..(594); OTHER INFORMATION: US-09-727-855B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
Matches 89; Conserv
```

ihis Page Blank (uspto)

```
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
```

OM nucleic - nu	OM nucleic - nucleic search, using sw model
Run on:	April 1, 2004, 12:35:05; Search time 14031.5 Seconds (without alignments) 11219.210 Million cell updates/sec
Title: Perfect score: Sequence:	US-09-727-855B-1 3632 1 tcctgttgataatctttctaaagagcttgaaccattgtag 3632
Scoring table:	IDENTITY NUC Gapop 10.0, Gapext 1.0
Searched:	3470272 seqs, 21671516995 residues
Total number of	Total number of hits satisfying chosen parameters: 6940544
Minimum DB seg Maximum DB seg	Minimum DB seq length: 0 Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries GenEmbl:* Database :

gb ba:*
gb htg:*
gb htg:*
gb in:*
gb on:*
gb ov:*
gb ov:*
gb pr:*
gb pr:*
gb pr:*
gb v:*
gb v

Pred. No. is the number of results predicted by chance to have a

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

		æ				
Result		Query				
No.	Score	Match	Length	DB	ID	Description
, -	3632	100.0	3632		AX128476	
8	(7)		3632		1571	15710
ю	51.	4.	699	9	n	0 1 5
4		4.2	699		71	2177
S	94.8		7218			94 50
9	84.2		728		99	568 CHANA PACE
7			728			0
80		2.3	678		AY423629	
<u>ი</u>	78.8		779	Н	C	. 2
10	•		897		MMNSODR	04972
11			9		AB087277	CEDEM 7
12			900		\ \	Macaca
13	77.2		009	9	7	4 E
14			954		AB001693	Emins
15			009		AB087276	
16			836	Н	BC018173	73
17			1162	10	BC010548	M. B.
18			270		BD190035	ANG
19		2.0	627			֓֞֝֞֜֝֞֜֝֓֞֝֟֝֓֟֝֟֝֓֓֟֟֝֓֓֓֟֟֝
20	74		631		AY280719	AY280719 Homo gani
21	74	-	639	σ	AY280718	B Homo
22		2.0	640		AY280721	
23			999	_	AX526146	Segue
24		2.0	699		BT006967	BT006967 Homo sani
25			699		7	Svnt
56	74	5.0	813		34	Sequence
27		2.0	813	9	AR106627	7 Seguenc
28			829		AR380803	Sequenc
29			829			uman mRN
30	74		930		300	AX753009 Sequence
31			940		4	Homo sa
32	4/		1026		34	Segue
		2.0	1026		HSSOD	Ē
გე (1032	9	AR363929	AR363929 Sequence
35			1438		RNMNSOD	å
36			1492	9	AX401951	AX401951 Sequence
7 6			2555		AX097395	Ξ
α r			325		AX469763	63 Seque
2.5	73		414		AX886313	13 S
0 1	73		414		BD025923	23
41	۷,		979	w	BC060895	895
24.	72.6	2.0	0	σ	AB087275	275
4.3	· i		0	σ	AB087280	Cebus
4, 4 4, 1	n o		9	σ	B087	B087281 Callit
4. C	72.6			4	S67818	S67818 manganous s

ALIGNMENTS

linear PAT 15-MAY-2001		Phaffia rhodozyma)	ycetes; Cystofilobasidiales;		articularly astaxanthin
AX128476 3632 bp DNA Sequence 1 from Patent EP1111067. AX128476	AX128476.1 GI:14134943		Eukaryota; Fungi; Basidiomycota; Hymenomycetes; Heterobasidiomycetes; Tremellomycetidae; Cystofilobasidiales; Cyeryfilohasidiales;	creationasidiaceae; Adminiophyllomyces.	Hoshino,T., Ojima,K. and Setoguchi,Y. Recombinant production of carotenoids, particularly astaxanthin
RESULT 1 AX128476 LOCUS DEFINITION ACCESSION	VERSION KEYWORDS	SOURCE ORGANISM		REFERENCE	AUTHORS TITLE

Hoshino,T., Ojima,K. and Setoguchi,Y. Recombinant production of carotenoids, particularly astaxanthin

8 ò Db ð

à

8

q ò g

장염

원 장 qq à Dp ò g ò q ₹

1500 1560 1200 1260 1320 1380 1380 1440 1440 1500 1620 1140 1260 1020 1080 1140 1200 1020 096 096 840 840 900 720 780 780 720 CAAGTICAACGGAGGAGGACACATCCATCAGTGATATICTTCAAACTCTTGCTGAGC CAAGTICAACGGAGGAGGACACAICAATCGICAGTIGAIATTCTICAAACTCTIGCTGAGC AAGICAGGICAAGCIGACTGITTCGCTTTCTGCGGATCTATCTCATCTTGATTTG TTCAAAAGGCTTTCTCCATCTTAAGCTCATTCTCATCTAACCGACTCATCTCGTTCCCAT CATTCCCATCATCTACCGCCATCCATGTTCGAGCATCCCTCTTCCGTGTCTAG 1201 TCAGCTCGATAGACTAACCCATCTCCTCGACATTCTTTTACTGGAAACGTATCTTT 1261 GTCCTTGGTTTTTCTTGGCTTTGGTTGAAATTCCTCTCCACTCAGGCCCTGGAGCCTC CATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGG GGGAGATGAAGTTTGATGAGCGCTCATCGTCTAGCACGTTGACCCGATCATACAGGCTCT TTTCGTCTTCGCCCTCTAGCTCTTCTTCGTCCTGCTCCTTTGTTGTTGATAT rrregretregecercragererrefregreeringsregreererrightstatat TCAGCTCGATAGACTAACCCATCTCCATCTTCGACATTCTTTACTGGAAACGTATCTT GICCIIGGITITITITIGGITIGGITIGAAAATTCCTCCACTCAGGCCCTGGAGCCCTC CATCTCCAAGGAGATCATGAGCCTTCACCACAAGCACCATCAGACTTATGTTAACGG CCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCA GGTTAAGCTTCAGTCTGTACGTCTGACCGTTTTTTTTATCGACCGGAACGCCTGGTGAGGA TAATACCTGGCGTCATCCCCCCAGCCGAGGCAAGAGCCGAGGCCGCTCGTGAACGACAAAA TCCTTACGCTTACGATGTAAGACTTTTCCGTGTTCTCCTATTCGTCGCTTTCTTGGTTTT CTGGTGTCTAGGGTTATAGCTCGACGCGACGCGATTTGAGACGCGATATGCTTACG

481 ATATCGAAGGGCACAGAGCCCTTCGTTTTTTTTTTTTTT	GTCCTTGGTTTTTTTTTTGGCTTTGGTTGAAATTCCTCTCCCACTCGGGCCCTGGAGCCCT GTCCCCAGGGGGTTGACCTTCACCACCAGGCCCTTGAGTTTATG CATCTCCAAGGAGTCATGACCTTCACCACCAAGCCCATCAGACTTATGTTAAG CATCTCCAAGGAGAGAGCTTCACCACCAAGCCCATCAGATTATTTAAGC CCTCAACGCTGCGAGGAGAGCTTCACCGCCGTTGGGCACCATCAGATTATTTAAGC CCTCAACGCTGCGAGGAGAGCTACTCGGCCGCTGTGGGCACGAAGACTTATTAACCC GGTTAAGCTTCAGTCTGTACCTCTACCGCTTTTTTTTTATCGACCGGAACGCCTGGTGAGG GGTTAAGCTTCAGTCTGTACGTCTGACCGTTTTTTTTTT
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4
TITLE Recombination production of carotemoids, in particular, astaxanthin JOURNAL, Patent: JP 2001190294-A 1 17-JUL-2001; P HOFFWAN LA ROCHE AG COMMENT OF 2001190294-A/1 P HOSPAN LA ROCHE AG COMMENT OF 2001190294-A/1 P D 20	Oy 181 GATGTGCGCGAGGATTTGTCATTAAATGGTGTTGTATAGCTAGAGCAGAGAAGACAT 240 181 GATGTGCGCGAGGATTTGTCATTAAATGGTGTTGTATAGCTAGAGCCAAGAGAAGACAT 240 241 TTGGTTTTGGTTTTGGTTTTGATTGAAGAGAGCCAAGAGAGAG

us-09-727-855b-1.rge

PC

1364

169

229

ö

Gaps

```
1365 AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGG 1424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PAT 28-DEC-1997
(C12P23/00,C12R1:01),(C12P23/00,C12R1:18),(C12P23/00,C12R1:20),(C12P23/00,C12R1:465),(C12P23/00,C12R1:645),C12N1S/00 CC
Recombination production of carotenoids, in particular, CC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1035 CICCIGCIGCITICCAGAICAGGCAAAGCAIACCCIGCCIGAGCIICCIIACGCTIACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCTAGCTCTTCTTCGTCCTTTCTGTCCTGCTCTTTGTTGTTGATATTCAGCTCGATAGAC
                                                                                                                                                                                                                                                                                                                                                                                                         1305 AGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATC
                                                                                                                                                                                                                                                                                                                                               110 ATGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  915 TCCATCTTAAGCTCATTCTCATCTAACCGACTCCATCGTTCCCCATCATTCCCATCATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                            .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 7218;
                                                                                                                               1. .669
.organism="Xanthophyllomyces dendrorhous"
/mol_type="genomic DNA"
/db_xref="taxon:5421"
                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dorner, F., Scheiflinger, F. and Falkner, F. Gunter. Recombinant fowlpox virus
Patent: US 5670367-A 14 23-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.6%; Score 3.1%; Pred. No. 1.1e-13, 75; Mismatches 117;
                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                          1425 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                         Location/Qualifiers
                                                                                                                                                                                                                                      Score 151.4; DB 6
Pred. No. 6.8e-31;
0; Mismatches 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  166494 7218 bp 1 Sequence 14 from patent US 5670367.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="unassigned DNA"
                                                                                         (1). .(669)
Location/Qualifiers
1. .669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="unknown"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative 255;
                                                                                                                                                                                                                                          4.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GI:2724471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (bases 1 to 7218)
                                                                                                                                                                                                                                        Query Match
Best Local Similarity 99.3
Matches 152; Conservative
                                                          astaxanthin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity
Matches 12, Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       166494
166494.1
                                                                              Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Unknown
                                                                              FH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1095
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEYWORDS
                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     166494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                                            \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MSVRASISSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSIS
KEIMTLHHTKHHQTYVNGLARAEESYSAAVGKEDVI.TQVK.LGSALKTNGGGHINHSILF
KKILAPYGSEEATLSEGPLKKAIEESFGSFEAFKKFNADTAAVGGSGMGWLGINPLT
KKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARL
QAAL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   particular, astaxanthin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1365 AGACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGG 1424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PAT 27-AUG-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     229
                                                                                                                                                                                     particularly astaxanthin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1305 AGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                110 Argecergeagecercearcrecaagaaarcargaeeerreaceacacaaagaacaare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     170 AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JP 2001190294-A/4.

Xanthophyllomyces dendrorhous (anamorph: Phaffia rhodozyma)
Xanthophyllomyces dendrorhous
Bukaryota; Fungi; Basidiomycota; Hymenomycetes;
Heterobasidiomycetes; Tremellomycetidae; Cystofilobasidiales;
Cystofilobasidiaceae; Xanthophyllomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OS Phaffia rhodozyma
PN JP 2001190294-A/4
PD 17-JUL-2001
PP 01-DEC-2000 JP 2000367099
PR 01-DEC-1999 EP 99123821.3
PR TATSUO HOSEHNO, KAZUVUKI OJIRA, YUTRKA, SETOGUCHI PC C12N15/99, C12N1/15, C12N1/19, C12N1/21, C12P23/00, C12Q1/68// PC
                                                                                  Xanthophyllomyces dendrorhous
Eukaryota; Fungi; Basidiomycota; Hymenomycetes;
Heterobasidiomycetes; Tremellomycetidae; Cystofilobasidiales;
                                                                 Xanthophyllomyces dendrorhous (anamorph: Phaffia rhodozyma)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BD015713 669 bp DNA linear PA7
Recombination production of carotenoids, in particular,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 6; Length 669;
                                                                                                                                                                                                                                                                               /organism="Xanthophyllomyces dendrorhous"
/mol type="unassigned DNA"
/db xref="taxon:5421"
1. -669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4.2%; Score 151.4; DB 6; Length 99.3%; Pred. No. 6.8e-31; ive 0; Mismatches 1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 (bases 1 to 669)
Hoshino,T., Ojima,K. and Setoguchi,Y.
Recombination production of carotenoids,
Patent: JP 2001190294-A 4 17-JUL-2001;
PHOFFMANN LA ROCHE AG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                      Cystofilobasidiaceae; Xanthophyllomyces.
                                                                                                                                                                                                                                                                                                                                                        'note="unnamed protein product"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          230 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 262
                                                                                                                                                       1
Hoshino,T., Ojima,K. and Setoguchi,Y.
Recombinant production of carotenoids,
Patent: EP 1111067-A 4 27-JUN-2001;
F. HOFFMANN-LA ROCHE AG (CH)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                     /protein id="CAC38928.1"
/db_xref="GI:14134947"
/db_xref="REMIREMBL:CAC38928"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GI:22556850
                                                                                                                                                                                                                                                                                                                                                                         codon start=1
                             GI:14134946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                    . . 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          astaxanthin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
Matches 152; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BD015713.1
             AX128479
AX128479.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                  ORGANISM
                                                                                                                                                       REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KEYWORDS
SOURCE
              ACCESSION
                            VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BD015713
                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 4
                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
```

a ò g

à

g

à

1094

ö

임 ò qq

```
Sequence 5 from patent US 6432407.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/product="MnSOD"
                                                      GI:23330439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AY423629.1 GI:37694051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="SOD2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1. .678
                                                      AR222757.1
                                                                                Unknown.
                                                                                              Unknown
           LOCUS
DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCUS
                                                                                             ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
REFERENCE
AUTHORS
                                                   VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                JOURNAL
                                                                                                                         REFERENCE
                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 8
AY423629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
4R222757
                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                     ORIGIN
                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                     Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
        1215 TAACCCATCTCATCTCCTGGACATTCTTTTACTGGAAACGTATCTTGTCCTTGGTTTTTC 1274
                        PAT 28-JUL-1999
                                                                                                                                                                                                                                                                         1 (bases 1 to 728)
Takesako, K., Daimon, H., Kuroda, M., Katou, I., Yasueda, H., Akiyama, K.
and Yamaguchi, H.
                                                                                                                                                                                                                                                                                                                                                                                                                        KATOU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1365 AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGTACTTCGGCCGCTGTGGGCAAGG 1424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              110 AGACCTACGTGAACAACTCAACGCCGCGAGAAGGCGTACGCTGAGGCGACGGCGA 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            peptide 1. .618 /
/product='Malassezia antigen protien MF-3'.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50 AIGCGCIGGAGCCGITIAICICTAAGGAGAICAIGACGGICCACCACGACAAGCACCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                             PI YASUEDA HIROSHI, AKIYAMA KAZUO, YAMAGUCHI HIDEYO PC
CO7K14/195, A61K39/35, C07H21/04, C07K7/08, C12N15/09, C12Q1/68, PC
G01N33/53,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                          Malassezia furfur
JP 1998077296-A/3
24-MR-1998
05-SEP-1996 JP 1996257613
TAKESAKO KAZUTADA, DAIMON HISASHI, KURODA MASANOBU, PI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                  RECOMBINÂNT MALASSEZIA ANTIGENIC PROTEIN AND ITS GENE
Patent: JP 1998077296-A 3 24-MAR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2.3%; Score 84.2; DB 6; Length 728; ilarity 71.9%; Pred. No. 7.1e-12; Conservative 0; Mismatches 43; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      organism='Malassezia furfur'
                                                                                                                                                                linear
                                                                                                                                                          728 bp DNA line
CDNA encoding Malassezia antigen protein MF-3.
E15568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1425 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       170 Accaccicirraaccacarccacciccacacic 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               clone='pMF3-1'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="unidentified"
/mol_type="genomic DNA"
/db_xref="taxon:32644"
                                                                             1275 ITGGCTTTGGTTGAAATTCCTCT 1298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      strandedness: Double;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      topology: Linear;
hypothetical: No;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /strain='TIMM2782'
                                                                                                                                                                                                  E15568.1 GI:5710251
JP 1998077296-A/3.
unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               anti-sense: No;
                                                                                                                                                                                                                                                                                                                                               TAKARA SHUZO CO LID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       G01N33/569;
                                                                                                                                                                                                                                                unidentified
                                                                                                                                                                                                                                                              unclassified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                   IKUNOSHIN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Simil
Matches 110; C
                                                                                                                                                                                                                                                                                                                                                           OS
PN
PP
PF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FT
FT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       出出出出出出出出出
                                                                                                                                               E15568
LOCUS
DEFINITION
                                                                                                                                                                                      ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                  TITLE
JOURNAL
                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                            COMMENT
                                                                                                                                 RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
```

RESULT

g

g ð

ò

```
1364
  PAT 26-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PLN 21-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bukaryota; Fungi; Basidiomycota; Hymenomycetes;
Heterobasidiomycetes; Tremellomycetidae; Tremellales; Tremellaceae;
Filobasidiella.
                                                                                                                                          Unclassified.

Unclassified.

(Conclassified.)

Takesako,K., Okado,T., Yagihara,T., Kuroda,M., Onishi,Y., Kato,I., Akiyama,K., Vasueda,H. and Yamaguchi,H.

Antigenic protein originating im malassezia

Patent: US 6432407-A 5 13-AUG-2002;

Location/Qualifiers

1. 728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     110 AGACCTACGTGAACAACCTCAACGCCGAGAAAGGCGTACGCTGAGGGGGACGGCCGCGA 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1305 AGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      50 ATCCGCTGGACCCGTTTATCTCTAAGGAGATCATGACGGTCCACCACCACGACAAGCACCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1365 AGACTIATGITAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCCAAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gattii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 (bases 1 to 678)
Narasipura, S.D., Chaturvedi, V. and Chaturvedi, S.
Complete cDNA of MnSOD of Cryptococcus neoformans var. gatti
Unpublished cDNB
Narasipura, S.D., Chaturvedi, V. and Chaturvedi, S.
Direct Submission
Submitted (28-SED-2003) Mycology, Wadsworth Center, 120 New Scotland Ave, Albany, NY 12208, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Cryptococcus bacillisporus (Filobasidiella bacillispora)
Cryptococcus bacillisporus
                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 728;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              678 bp mRNA linear
Cryptococcus bacillisporus MnSOD mRNA, complete cds.
AY423629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           43; Indels
  linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      organism="Cryptococcus bacillisporus"
                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 2.3%; Score 84.2; DB 6; Best Local Similarity 71.9%; Pred. No. 7.1e-12; Matches 110; Conservative 0; Mismatches 43;
mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1425 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       170 ACGACGTGCTTAAGCAGATCCAGCTGCAGAGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /mol_type="mRNA"
/db_xref="taxon:37769"
```

.; 0

g ð

ð

```
/mol_type="mRNA"
/db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                      897 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               codon_start=1
729^730
/citation=[1]
/replace="g"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.2%;
                                                                         2.2%;
ilarity 69.5%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                   GI:53449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACKK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
Matches 107; Conserv
                                                                            Query Match
Best Local Similarity
Matches 107; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                   X04972
X04972.1
                                                                                                                                                                                                                                                                                                                                                                     MMNSODR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sig_peptide
mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   polyA_site
ORIGIN
                                                                                                                                                                                                                                                                                             264
                                                                                                                                                                                                                                                               1427
   conflict
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                 KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                          RESULT 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PEATURES
                                               ORIGIN
                                                                                                                                                                                                                                                                                                                                                                      LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Db
                                                                                                                                                                    셤
                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                        g
                                                                                                                                         à
                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="MLCRAACSTGRRLGPVAGAAGSRHKHSLPDLPYDYGALEPHINA
ONDLHSRKHHAAYNNLHAREKYHBALAKODYTQVALQPALKRHGGGHINHTIFW
TNLSPKGGGEPRGELLEAIRAPGSFERKFKEKLTANSVGVQGSGWRLGFNKEQGRLQ
TAACSNGOPLQGTTGLIPLLGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYT
                                                                                                            2389 AGATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTG 2448
                                                                                                                                                                                                                                                                                ROD 17-FEB-1997
                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 779)
Hallewell, R.A., Wullenbach, G.T., Stempien, M.M. and Bell, G.I. Sequence of a cDNA coding for mouse manganese superoxide dismutase Nucleic Acids Res. 14 (23), 9539 (1986)
                                                                                                                                          560 ACATCTGGGAGCATGCTTTCTACCTTCAGTACAAGAACGTCAAGAGCCCGATTACCTCAACG 619
                                                                                                                                                                                                     ccarcriggeacerrarcaacracgaegeaceceaegaaccercreaaegecrecererea 678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sun,Y., Hegamyer,G. and Colburn,N.H.
Sequence of manganese superoxide dismutase-encoding CDNAs from
                                                                                                                                                                         CTGTTTGGTCCGTTATCAACTACAAGGAGGCAGGCCCGATTGCAGGCTGCTCTTAA
                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="mRNA"
/strain="BALB/c and/or C3H"
/db_xref="taxon:10090"
/fissue type="liver, kidney, brain, spleen, heart"
36 704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Direct Submission
Submitted (25-NOV-1992) Sun Y., FCRDC, CBS, LVC, P.O. Box
Frederick, MD, 21702-1201
                                                                               ;
0
                                                                                                                                                                                                                                                                               MMNSODRX 1719 bp mRNA linear M.musculus mRNA for manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             108. .701
/product="manganses superoxide dismutase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        36. .704

/codon_start=1

/product="manganese superoxide dismutase"

/protein_id="CAA79308.1"

/db_xref="G1:288505"

/db_xref="GOA:POST:ROF1"

/db_xref="GOA:POST:ROF1"

/db_xref="Mangas-PROT:ROF71"
                                                                               23; Indels
                                                 Length
                                                   DB 8;
                                                 Score 82.2; DB 8;
Pred. No. 2.6e-11;
                                                                               0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                           Z18857.1 GI:288504
manganese superoxide dismutase.
Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                multiple mouse organs
Gene 131 (2), 301-302 (1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         88. .89
/citation=[1]
/replace="tg"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /citation=[1]
/replace="a"
                                                 2.3%;
ilarity 80.7%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (bases 1 to 779)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 779)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .107
       NRLKAAL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACKK"
                                                                                                                                                                                                                                                                                                                                                                              Mus musculus
                                                                   Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     37091590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1010326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3797253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8406027
                                                                                                                                                                                                                                                                                                                  Z18857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sun, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sig_peptide
mat_peptide
                                                                               96;
                                                                                                                                                                          2449
                                                                                                                                                                                                         620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        conflict
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           conflict
                                                      Query Match
                                                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                               DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
TITLE
JOURNAL
MEDLINE
                                                                      Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                     MINISODRX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                     RESULT
                       ORIGIN
```

```
OIMOLHHSKHHAAVUNNINATEEKYHEALAKGDVTTQVALQPALKFNGGGHINHTIFW
TNLSPKGGGBPKGELLEAIKRDFGSFEKFKEKLTAMSVGVQGSGWGWLGFNKEQGRLQ
IAACSNQDPLGGTTGLIPLLGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1367 ACTTATGTTAACGCCTCAACGCTGCCGAGGAGACTACTCGGCCCCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /db_xref="SWISS-PROT:P09671"
/translation="MLCRAACSTGRRLGPVAVAAGSRHKHSLPDLPYDYGALEPHINA
                                                                                              1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                  1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 897)
Hallewell, R.A., Mullenbach, G.T., Stempien, M.M. and Bell, G.I. Sequence of a cDNA coding for mouse manganese superoxide dismutase Nucleic Acids Res. 14 (23), 9539 (1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ROD 18-MAY-1994
                                                                                                                                           204 gecnacengaacareneakeeraceakeakaakaana acareakeerenekakaa 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             221 GCCTACGTGAACACCCTCAACGCCACCGAGGAGAAGTACCACGAGGCTCTGGCCAAGGGA 280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ..
0
                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 897;
Length 779;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      manganese superoxide dismutase; superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mouse mRNA for manganese superoxide dismutase (MnSOD)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          product="manganese superoxide dismutase"
protein id="CAA28645.1"
/db_xref="GI:53450"
/db_xref="GOA:P09671"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      53. .124
125. .718
/product="manganese superoxide dismutase"
897.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 78.8; DB 10;
Pred. No. 2.5e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        47;
Score 78.8; DB 10;
Pred. No. 2.4e-10;
0; Mismatches 47;
                                                                                                                                                                                                                                                                                                           GAIGIGCITACCCAGGITAAGCITCAGICIGIAC 1460
                                                                                                                                                                                                                                                                                                                                                       GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'organism="Mus musculus"
```

ö

ਨੇ

```
Direct Submission
Submission
Submitted (02-JUL-2002) Ryoji Fukuhara, Primate Research Institute,
Kyoto University, Center for Human Evolution Modeling Research;
Kanrin, Innyama, Aichi 484-8506, Japan
(E-mail:fukuhara@pri.kyoto-u.ac.jp, Tel:81-568-63-0578,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /trānslation="MKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNYTEE
KYSPALAKOPVTAQLPALOPALEKHOGGAPINHSI FWTWILSPNGGGEPKGELLEAIKRDF
GSFERKEKLTAASVGVGGSGWGWLGFNKERGQLQIPECPNQDPLQGTTGLIPLIGID
VWEHAYYLQYKNVRPDYLKAIWNVINWENYTERYMACKK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1367 ACTIATGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRI 04-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission
Submitted (02-JUL-2002) Ryoji Fukuhara, Primate Research Institute,
Kyoto University, Center for Human Evolution Modeling Research;
Kanrin, Inuyama, Aichi 484-8506, Japan
(E-mail:fukuhara@pri.kyoto-u.ac.jp, Tel:81-568-63-0578,
Bukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Butheria, Primates, Catarrhini, Cercopithecidae,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Primates, Catarrhini, Cercopithecidae,
                                                                                                                   Fukuhara,R., Tezuka,T. and Kageyama,T.
Structure, molecular evolution, and gene expression of primate
superoxide dismutases
Gene 296, 99-109 (2002)
2 (Dases 1 to 600)
Fukuhara,R. and Kageyama,T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100 GCCTACGTGAACAACCTGAACGTTACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         rukunara,R., Tezuka,T. and Kageyama,T.
Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              navoraly
Macaca mulatta mRNA for Mn-superoxide dismutase, complete cds.
AB087279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2.1%; Score 77.2; DB 9; Length 600; 68.8%; Pred. No. 6.6e-10; ive 0; Mismatches 48; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
/product==mh-superoxide dismutase"
/protein_id="BAC20357.1"
/db_xref="GI:23503534"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Macaca fascicularis"
/mol_type="mRNA"
/db_xref="taxon:9541"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          160 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 193
                             Mammalia, Eutheria, Primates;
Cercopithecinae, Macaca.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Macaca mulatta (rhesus monkey)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Fax:81-568-63-0085)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gene 296, 99-109 (2002)
2 (bases 1 to 600)
Fukuhara,R. and Kageyama,T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Cercopithecinae; Macaca.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AB087279.1 GI:23503535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Macaca mulatta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 106;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KEYWORDS
SOURCE
ORGANISM
                                                                                                                      AUTHORS
TITLE
                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                            REFERENCE
                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 13
AB087279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                 PRI 04-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Direct Submission
Submitted (02-JUL-2002) Ryoji Fukuhara, Primate Research Institute,
Kyoto University, Center for Human Evolution Modeling Research;
Kanrin, Inuyama, Aichi 484-8506, Japan
(E-mail:fukuhara@pri.kyoto-u.ac.jp, Tel:81-568-63-0578,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /tränglation="MKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNYTEE
KYGALAKRODYTAQIALQPALKENGGGHINHGIPWTNLSPNGGGEPKGELLBAIKRDF
GSFEKEKEKLTAASVOVGGGGWGWLGFNKERGQLQIAACPNQDPLQGTTGLIPLLGID
VWEHAYYLQYKNVRPDYLKAIWNVINWENYTERYMACKK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1367 ACTIANGILAACGGCCTCAACGCTGCCGAAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AB087278 600 bp mRNA linear PRI 04-OCT-2002 Macaca fascicularis mRNA for Mn-superoxide dismutase, complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100 Gécriacéricaacaracericaacerraeceacadada de acertacerra de contra de cont
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fukuhara,R., Tezuka,T. and Kageyama,T.
Structure, molecular evolution, and gene expression of primate superoxide dismutases
Gene 296, 99-109 (2002)
2 (bases 1 to 600)
Pikuhara,R. and Kageyama,T.
                                                                                                                                                                                                            AB087277 600 bp mRNA linear PRI 04-OCT
Macaca fuscata mRNA for Mn-superoxide dismutase, complete cds.
AB087277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             40 GCCCTGGAGCCTCACATCAACGCGCAGATCATGCAGCTGCACCACACAAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ó.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.1%; Score 77.2; DB 9; Length 600; 68.8%; Pred. No. 6.6e-10; ive 0; Mismatches 48; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
/product="Mn-superoxide dismutase"
/protein_id="BAC20356.1"
/db_xref="GI:23503522"
                GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAIGIGCTTACCCAGGITAAGCITCAGICTGTAC 1460
                                                                            281 GAIGITACAACTCAGGICGCTCTTCAGCCTGCAC 314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Macaca fascicularis (crab-eating macaque)
Macaca fascicularis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            organism="Macaca fuscata"
                                                                                                                                                                                                                                                                                                                                                                                               Macaca fuscata (Japanese macaque)
Macaca fuscata
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /mol_type="mRNA"
/db_xref="taxon:9542"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cercopithecinae, Macaca.
                                                                                                                                                                                                                                                                                                                                AB087277.1 GI:23503531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AB087278
AB087278.1 GI:23503533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches 106; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . . 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AB087278
             1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        160
                                                                                                                                                                                                                                                                                                                                                                                            SOURCE
ORGANISM
                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                               ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AUTHORS
TITLE
                                                                                                                                                                        RESULT 11
AB087277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 12
AB087278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
```

FEATURES

à g ò

ORIGIN

g

g ਨੇ

ਨੇ

g

ò

```
/translation="wkepsipplpydygalebhinaqimqlhhekhhayvunluvyeb
kyqbalakgdytaqolalqbalkknggghinhsipwtnlspngggepkgelleaikkdf
gsfdkfkekltatsvgvqggsgwgwlgfnkekghlolaacpnqdplqgttglipllgid
vwehayylqyknvrppylkaiwnvinwenvtekymackk"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gene 296, 99-109 (2002)
2 (Dases I to 600)
Pukuhara,R. and Kageyama,T.
Submitted (02-JUL-2002) Ryoji Fukuhara, Primate Research Institute, Kyoto University, Center for Human Evolution Modeling Research; Kanrin, Innyama, Aichi 484-8506, Japan (E-mail:fukuhara@pri.kyoto-u.ac.jp, Tel:81-568-63-0578,
70. .738
// gene="Mn-SOD"
/codon_start=1
/product="manganese superoxide dismutase"
/procein_id="BAA76922.1"
/procein_id="145898922.1"
/procein_id="145898922.1"
/procein_id="1458989822.1"
/procein_id="1458989828KIVPALGSLGSRQKHSLPDLQYDYGALEPYINA
QIMQLHHSKHHAAYYNNLNYTEEKYOEALAKGDVTAQIALOPALKFNGGGHINHTIFW
TWISPNGGGEPKGKLIDAIKRDFGSFDKFKEKLTAVSAGVGSGWGMLGFNKDQGRLQ
IVACPNQDPLGGTTGLIPLLGIDVWEHAYYLQYKNVRPDYLKAIMNVINWENVSERYM
ACKK.
                                                                                                                                                                                                                                                                                                                                                                                                                             1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRI 04-OCT-2002
                                                                                                                                                                                                                                                                                                                                            GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                     237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Būkaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi;
Mammalia, Butheria, Primates, Catarrhini, Hylobatidae, Hylobates.
                                                                                                                                                                                                                                                                                                                                                                                                                           1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGAGTACTCGGCCGCTGTGGGGCAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    238 gectratergaacaecteaaceteaeceteaegaeaaraetaeaeaeaeceteaeae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Structure, molecular evolution, and gene expression of primate superoxide dismutases
                                                                                                                                                                                                                                                                                                                                                                                     Generadadecenacianeadececadareareareareadacadeadadeadecadeade
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AB087276 600 bp mRNA linear PRI 04-OC Hylobates lar mRNA for Mn-superoxide dismutase, complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ;
0
                                                                                                                                                                                                                                                                                                          .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 600;
                                                                                                                                                                                                                                                                Score 77.2; DB 4; Length 954; Pred. No. 7.2e-10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /product="Mn-superoxide dismutase"
/protein_id="BAC20355.1"
/db_xxref="G1:23503530"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
2.1%; Score 75.6; DB 9;
Best Local Similarity 68.2%; Pred. No. 1.9e-09;
Matches 105; Conservative 0; Mismatches 49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACGIGACAGCICAGATIGCICTGCAGCCIGCAC 331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fukuhara, R., Tezuka, T. and Kageyama, T.
                                                                                                                                                                                                                                                                                                            0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Hylobates lar"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /mol_type="mRNA"
/db_xref="taxon:9580"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hylobates lar (common gibbon)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AB087276
AB087276.1 GI:23503529
                                                                                                                                                                                                                                                                      2.1%; 68.8%; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Fax:81-568-63-0085
                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ı. .600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hylobates lar
                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                             Best Local Sim
Matches 106;
                                                                                                                                                                                                                                                                                                                                                                                             178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1427
                                                                                                                                                                                                                                                                                                                                                         1307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              298
                                                                                                                                                                                                                                                                          Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AB087276
      CDS
                                                                                                                                                                                                                                                                            Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                    ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     p mRNA linear MAM 14-DEC-1999
manganese superoxide dismutase,
                                                                                                                                                                                                                                  /translation="MKHSLPDLPYDYCALEPHINAQIMQLHHSKHHAAYVNNLNVTEE
KYQBALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGEPKGELLEAIKRDF
GSFEKFKEKLTAASVGVQGSGWGWLGFNKERGQLQIAACPNQDPLQGTTGLIPLLGID
VWEHAYYLQYKNVRPDYLKAIMNVINWENVTERYMACKK"
                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                      GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1367 ACTTANGTIAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100 gcciacdreaacaccreaacerracedaggagaagaacaggaggeerraggcaaagge 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ishlan, X. Xatayama, Y., Sato, F., Hasegawa, T. and Mukoyama, H. The cDNA sequences of equine antioxidative enzyme genes Cu/Zn-SOD and Mn-SOD, and these expressions in equine tissues J. Vet. Med. Sci. 61 (3), 291-294 (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Equus caballus
Eukaryota, Metazoa, Chordata, Craniata; Vertebrata; Euteleostomi,
Mammalia; Eutheria, Perissodactyla; Equidae; Equus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Direct Submission
Submitted (07-MAR-1997) Nobushige Ishida, JRA Equine Research
Institute, Laboratory of Molecular and Cellular Biology; 321-4,
Tokami-Cho, Utsunomiya, Tochigi 320-0856, Japan
(E-mmil:noishida@center.equinst.go.jp, Tel:81-28-647-0662,
Pax:81-28-647-0686)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCCCTGGAGCCTCACATCAACGCGCAGATCATGCAGCTGCACCACACGAGCACCACGCG
                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                      ;
                                                                                                                                                                                                                                                                                                                                                             Length 600;
                                                                                                                                                                                                                                                                                                                                                                                                    48; Indels
                                                                                                                                                                          /product="Mn-superoxide dismutase"
/protein_id="BAC20358.1"
/db_xref="G1:23503536"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                         Score 77.2; DB 9;
Pred. No. 6.6e-10;
0; Mismatches 48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 160 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AB001693.1 GI:4589877
Mn-SOD; manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Equus caballus"
/mol_type="mRNA"
/strain="Thoroughbred"
/db_xref="taxon:9796"
                                                                            /organism="Macaca mulatta"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="domestic horse"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         954 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Equus caballus Mn-SOD mRNA for complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     type="testis"
                                                                                         /mol_type="mRNA"
/db_xref="taxon:9544"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /dev_stage="adult"
                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="Mn-SOD"
                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Equus caballus (horse)
                                                                                                                                                                                                                                                                                                                                                                  2.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /sex="male"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 954)
                 Fax:81-568-63-0085)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /tissue
                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .954
                                                                                                                                        009
                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (sites)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bhida, N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99261591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AB001693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10331206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AB001693
                                                                                                                                                                                                                                                                                                                                                                                                        106;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40
                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                           source
                                                                                                                                                                                                                                                                                                                                                                                         Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AB001693
                                      FEATURES
```

SOURCE

ö

```
S q
```

qq δ

à

QQ

Search completed: April 1, 2004, 18:47:54 Job time : 14041.5 secs

This Page Blank (uspto)

78.8 2.2 353 13 BY327331 78.8 2.2 359 13 BQ086753 78.8 2.2 352 13 BY315073 78.8 2.2 352 13 BY310981 78.8 2.2 363 13 BY310981 78.8 2.2 467 14 CB274248 78.8 2.2 467 14 CB889637 78.8 2.2 566 14 CA889637	78.8 2.2 580 12 B1713308 78.8 2.2 689 13 BU743935 78.8 2.2 710 10 BF607468 78.8 2.2 730 12 B1904486 78.8 2.2 730 12 B1904486 78.8 2.2 130 14 CF583893 78.8 2.2 1022 14 CF589814 77.4 2.1 606 14 CA357120 77.4 2.1 679 14 CA376311 77.4 2.1 680 14 CA376311 77.4 2.1 680 14 CA375800 77.4 2.1 680 14 CA375800 77.4 2.1 680 14 CA375800 77.4 2.1 766 13 BX855859	77.2 2.1 397.7 7.2 2.1 431.7 7.2 2.1 431.7 7.2 2.1 828.7 7.6 8 2.1 776.7 5.8 2.1 475.7 5.8 2.1 640.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 358.7 75.6 2.1 370.7 75.6 2.1 3	CF192114 CF192114 333 bp mRNA lii 13917j2.r1 Cryptococcus neoformans strain B35 neoformans var. neoformans cDNA clone l3917j2 CF192114.1 GI:33513983 ECT CF192114.1 GI:33513983 ECT CF192114.1 GI:33513983 CYPTOCOCCUS neoformans var. neoformans (Filod var. neoformans) CYPTOCOCCUS neoformans var. neoformans Eukaryota; Fungi; Basidiomycota; Hymenomycetee Heterobasidiomycetes; Tremellomycetidae; Treme Filodsasidienla. Chases 1 to 333 Kupfer, D.M., Drabenstot, S.D., Buchanan, K.L., I Roe, B.A. and Murphy, J.W. Comparison of highly conserved intronic and exasociated with splicing among five diverse fu Unpublished (2003) Other_ESTS: 13917j2.f1 Contact: Murphy, JW Department of Microbiology and Immunology University of Oklahoma Health Sciences Center Oklahoma City, OK 73199, USA Tel: 405-271-2133 ex2133 Email: juneann-murphy@ouhsc.edu
5 7 7 7 8 8 8 9 10 11 11 11 11 11 11 11 11 11 11 11 11	14 165 17 188 17 188 17 188 17 18 18 18 18 18 18 18 18 18 18 18 18 18	00000000000000000000000000000000000000	RESULT 1 CF192114 LOCUS DEFINITION ACCESSION VERSION KEYWORDS SOURCE ORGANISM TITLE JOURNAL COMMENT
	US-09-727-855B-1 score: 3632 1 tcctgttgataatctttcta table: IDENTITY_NUC Gapop 10.0, Gapext 1.0 1: 27513289 seqs, 14931090276 umber of hits satisfying chosen para	seq length: Ssing: Minimu Maximu Listin Listin 1: em_m 2: em_m 3: em_m 3: em_m 4: em_m 6: em_	13: 9D est4:* 13: 9D est4:* 14: 9D_est5:* 15: em_est6nn:* 16: em_est6nn:* 17: em_est6nn:* 18: em_est6nn:* 19: em_est6nn:* 22: em_est6nn:* 23: em_est6nn:* 24: em_est6nn:* 25: em_est6nn:* 26: em_est6nn:* 27: em_est6nn:* 28: em_est6nn:* 29: em_est6nn:* 20: em_est6nn:*

```
organism="Cryptococcus neoformans var. neoformans"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Seg primer: M13-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTTTATGAACAAT 68
                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          var. neoformans)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Filobasidiella.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        information.
                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   80
                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 3
CF192113/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOURCE
                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Experience of the control of the con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    var. neoformans)
Cryptococcus neoformans var. neoformans
Eukaryota; Fungi; Basidiomycota; Hymenomycetes;
Heterobasidiomycetes; Tremellomycetidae; Tremellales; Tremellaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EST 08-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       end of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Cryptococcus neoformans var. neoformans (Filobasidiella neoformans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             260 ccaicideaaidilalcaachaceaggecegaaggicgichcaaggergereagaag 319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Email: juneann-murphy@ouhsc.edu
This clone is available from the Fungal Genetics Stock Center,
Phone 913-588-7044, http://www.fgsc.net/ Contact Dr. Bruce Roe
Lobe@ou.edu, www.genome.ou.edu) for sequencing questions Contact
Dr. Juneann Murphy(juneann-murphy@ouhsc.edu) for library
             This clone is available from the Fungal Genetics Stock Center, Phone 913-588-7044, http://www.fgsc.net/ Contact Dr. Bruce Roe (broe@ou.edu, www.genome.ou.edu) for sequencing questions Contact Dr. Juneann Murphy(juneann-murphy@ouhsc.edu) for library
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           jsk07j2.fl Cryptococcus neoformans strain B350l Cryptococcus neoformans var. neoformans cDNA clone jsk07j2 3', mRNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 200 ACATCTGGGAGCACCTTTCTATCTCCAGTACAAGAACGTCAAGCCCGACTATCTCAATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2389 AGAICIGGGAGCACGCITICIACCITCAGIACAAGAACGICAAGCCIGACIAICICGCIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2449 CIGITIGGICCGITAICAACIACAAGGAGGCAGAGGCCCGAIIGCAGGCIGCICTAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:40410"
/clone="13g17j2"
/lab host="B. col; strain SOLR"
/clone lib="Cryptococcus neoformans strain B3501"
/note="Vector: pBluescript sk-; Site_1: EcoRI at 5'
cDNA insert; Site_2: XhoI at 3' end of cDNA insert"
                                                                                                                                                                                                                                                                                                          /organism="Cryptococcus neoformans var. neoformans"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2.3%; Score 85; DB 14; Length 333; 77.4%; Pred. No. 1e-08; Live 0; Mismatches 30; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1e-08;
ches 30; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        High quality sequence stop: 379.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       388 bp
                                                                                                                                                                                 Seq primer: T3
High quality sequence stop: 327.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                              /mol_type="mRNA"
/strain="B3501"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CF186948
CF186948.1 GI:33508816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2509 CGGGACGAAAAGT 2521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTTTATGAACAAT 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Seg primer: M13-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                         . .333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Filobasidiella.
                                                                                                                                                      information.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CF186948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 103;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 2
CF186948/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMMENT
                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
```

g

d ਨੇ g

ò

```
end of
                                                                                                                                                                                                                                                                                                                                                                             2448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2449 CTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGAATGCAGGCTGCTCTAAG 2508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EST 08-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Fungi; Basidiomycota; Hymenomycetes;
Heterobasidiomycetes; Tremellomycetidae; Tremellales; Tremellaceae;
                                                                                                                                                       ij
                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cryptococcus neoformans var. neoformans (Filobasidiella neoformans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Email: juneann-murphy@ouhsc.edu
This clone is available from the Fungal Genetics Stock Center,
This clone is available from the Fungal Genetics Stock Center,
Phone 913-588-7044, http://www.fgsc.net/ Contact Dr. Bruce Roe
(broe@ou.edu, www.genome.ou.edu) for sequencing questions Contact
Dr. Juneann Murphy(juneann-murphy@ouhsc.edu) for library
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        81
                                                                                                                                                          end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E TIOUSEILEILE

KUPFET, D.M., Drabenstot, S.D., Buchanan, K.L., Lai, H., Dyer, D.W.,
Roe, B.A. and Murphy, J.W.
Roe, B.A. and Murphy, J.W.
Comparison of highly conserved intronic and exonic elements
associated with splicing among five diverse fungal organisms
L Unpublished (2003)
Other_ESTS: 1391712.r1
Contact: Murphy, JW
Department of Microbiology and Immunology
University of Oklahoma Health Sciences Center
Oklahoma City, OK 73130, USA
Tel: 405-271-2133 ex2133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1341712.fl Cryptococcus neoformans strain B3501 Cryptococcus neoformans var. neoformans cDNA clone 13917j2 3', mRNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lai, H., Dyer, D.W.,
                                                                                                                                                                                                                                                                                                                                                                           2389 AGAICTGGGAGCACGCTTTCTACCTTCAGTACAAAACGTCAAGCCTGACTATCTCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                             200 acarcidesadesecrricrarefecadaracaacareaageeeeaarare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone="13917j2"
/lab host="B. coli strain SOLR"
/clone lib="Cryptococcus neoformans strain B3501"
/note="Weetor: pBluescript sk-; Site 1: EcoRI at 5'
cDNA insert; Site_2: XhoI at 3' end of cDNA insert"
                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Cryptococcus neoformans var. neoformans"
/mol_trype="mRNA"
/strain="B3501"
                                                                                                                                                       /note="Vector: pBluescript sk-; Site_1: EcoRI at 5' cDNA insert; Site_2: XhoI at 3' end of cDNA insert"
                                                                                               /lab host="E. coli strain SOLR"
/clone_lib="Cryptococcus neoformans strain B3501"
                                                                                                                                                                                                                                                                                                                             .,
                                                                                                                                                                                                                                                                     DB 14; Length 388;
1e-08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          linear
                                                                                                                                                                                                                                                                                                                           30; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Cryptococcus neoformans var. neoformans
                                                                                                                                                                                                                                                                                                    Pred. No. 1e-0.0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db xref="taxon:40410"
                                                                                                                                                                                                                                                                           Score 85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          400 bp
                                                        /db_xref="taxon:40410"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
/mol_type="mRNA"
/strain="B3501"
                                                                                    /clone="j5k07j2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CF192113
CF192113.1 GI:33513982
                                                                                                                                                                                                                                                                              2.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGGGACGAAAAGT 2521
```

a ò d δ

```
Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BY327331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DRIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mus musculus charas, Craniata, Vertebrata; Euteleostomi, Manmalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Musc. E. L. Chaese I. to 337)

RS GAZZAKi,Y.; Furuno,M.; Kasukawa,T.; Adachi,J.; Bono,H.; Kondo,S.; Nikaido,I.; Osato,N.; Saito,R.; Suzuki,H.; Yamanaka,I.; Kiyosawa,H.; Yagi,K.; Tomaru,Y.; Hasegawa,Y.; Nogami,A.; Schonbach,C.; Golobori,T.; Baldacelli,R.; Hill,D. P.; Bult,C.; Hume,D.A.; Quackenbush,J.; Schriml,L.M.; Kanapin,A.; Matsuda,H.; Baralov,S.; Beisel,K.W.; Blake,J.A.; Bradt,D.; Brusic,V.; Crobani,L.B.; Cousins,S.; Dalla,B.; Dragani,T.A.; Fletcher,C.F.; Porrest,A.; Erzer,K.S.; Gaasterland,T.; Gariboldi,M.; Gissi,C.; Godzik,A.; Gough,J.; Grimmond,S.; Gariboldi,M.; Gissi,C.; Godzik,A.; Gough,J.; Grimmond,S.; Kawaji,H.; Kawasawa,Y.; Redzierski,R.M.; King,B.L.; Konagaya,A.; Kuwaji,H.; Kawasawa,Y.; Redzierski,R.M.; King,B.L.; Konagaya,A.; Kuwaji,H.; Kawasawa,Y.; Redzierski,R.M.; King,B.L.; Konagaya,A.; Kuwaji,H.; Rawasawa,Y.; Redzierski,R.M.; King,B.L.; Konagaya,A.; Kuwaji,H.; Yawasawa,Y.; Redd,J.C.; Reed,D.J.; Raid,J.; Ramachandran,S.; Ravasi,T.; Reed,J.C.; Reed,D.J.; Reid,J.; Ramachandran,S.; Ravasi,T.; Reed,J.C.; Reed,D.J.; Raid,J.; Ramachandran,S.; Ravasi,T.; Rama,R.; Yang,J.; Wallana,R.; Takenaka,Y.; Taylor,M.S.; Tasadle,R.D.; Tomita,M.; Varayi,L.; Wanj,Z.; Zavolan,M.; Zhu,Y.; Zimmer,A.; Carninci,P.; Wall,Z.; Zavolan,M.; Zhu,Y.; Zimmer,A.; Carninci,P.; Hayatsu,N.; Hirozane-Kishikawa,T.; Kanwai,K.; Kawai,J.; Alzawa,T.; Fukuda,S.; Hara,A.; Hashizume,W.; Malyasis of the mouse transcriptome based on functional annotation of 60,770 full-length cDNs.
                                                                                                                   2448
                                                                .
0
                                                                                                                                                                                                             2449 CTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTCTAAG 2508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BY327888
BY327888 RIKEN full-length enriched, synovial fibroblasts Musmussculus CDNA clone L030044H15 5', mRNA sequence.
                                                                                                                                                                        141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Laboratory for Genome Exploration Research Group, RIKEN Genomic Sciences Center(GSC), Yokohama Institute
The Institute of Physical and Chemical Research (RIKEN)
1-7-22 Suchiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan Tel: 81-45-503-9222
                                                                                                                                                                                                                                                             140 ccarcidgaardriatdaachacaagaggccaaagrcarcicaaggchgchdagaa 81
                                                                                                  2389 AGAICIGGGAGCACGCTITCTACCTICAGIACAAGAACGICAAGCCTGACIAICTCGCTG
                                                                                                                                                       200 ACATOTGGGAGCACGOTTTOTATOTCCAGTACAAGAAGGTCAAGCCCGACTATCTCAATG
                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Email: genome-res@gsc.riken.go.jp,
URL:http://genome.gsc.riken.go.jp/
Alzawa,K., Akimura,T., Arakawa,T., Carninci,P., Fukuda,S.,
                                                             0;
  DB 14; Length 400; 1e-08;
                                                     30;
                                                     0; Mismatches
  Score 85;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Contact: Yoshihide Hayashizaki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BY327888.1 GI:26518459
2.3%;
                                                                                                                                                                                                                                                                                                                     2509 CGGGACGAAAAGT 2521
                                                                                                                                                                                                                                                                                                                                                                           CTTTATGAACAAT 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fax: 81-45-503-9216
                                             Matches 103; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mus musculus
                         Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12466851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mus
                                                                                                                                                                                                                                                                                                                                                                           80
Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 4
BY327888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
```

SOURCE

TITLE

```
Hirozane, T., Imotani, K., Ishii, Y., Itoh, M., Kawai, J., Konno, H., Miyazaki, A., Murata, M., Nakamura, M., Nomura, K., Numazaki, R., Ohno, M., Sakazume, N., Sasaki, D., Sato, K., Shibata, K., Shiraki, Y., Sakazume, N., Sasaki, D., Sato, K., Shibata, K., Shiraki, T., Tagami, M., Waki, K., Watahiki, A., Muramatsu, M. and Hayashizaki, Y. Direct Submission

Computational haraysis of Full-Length Mouse cDNAs Compared with Human Genome Sequences Mam. Genome. 12, 673-677 (2001)

Normalization and subtraction of cap-trapper-selected cDNAs to prepare full-length cDNA libraties for rapid discovery of new genes. Genome Res. 10 (10), 1617-1630 (2000)

RIKEN integrated sequence analysis (RISA) system-384-format sequencing pipeline with 384 multicapillary sequencer. Genome Res. 10 (11), 1757-1771 (2000)

Computer-based methods for the mouse full-length cDNA encyclopedia: real-time sequence clustering for construction of a nonredundant cDNA library. Genome Res. 11 (2), 281-289 (2001)

CDNA library was prepared and sequenced in Mouse Genome Encyclopedia Project of Genome Exploration Research Group in Riken Genomic Sciences Center and Genome Exploration Research Group in Riken Division of Experimental Animal Research in Riken contributed to Tissues were provided by Vassilis Aidinis (Biomedical Sciences Research Center 'Al. Fleming' Institute of Immunology 14-16 Al. Remanned and sequence of Immunology 14-16 Al. acknowledge.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1367 ACTTANGTIAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGGTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EST 11-DEC-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          237 GCCTACGTGAACAACCTCAACGCCACGAGGAGAAGTACCACGAGGCTCTGGCCAAGGGA 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mus musculus
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Rodentia, Sciurognathi, Muridae, Murinae, Mus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (bases 1 to 353)

Okazaki, Y., Furuno, M., Kasukawa, T., Adachi, J., Bono, H., Kondo, S., Nikaido, I., Osato, N., Saito, R., Suzuki, H., Yamanaka, I., Kiyosawa, H., Yagi, K., Tomaru, Y., Hasegawa, Y., Nogami, A., Schonbach, C., Golobori, T., Baldarelli, R., Hill, D. D., Bult, C., Hume, D.A., Quackenbush, J., Schriml, L.M., Kanapin, A., Matsuda, H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Please visit our web site (http://genome.gsc.riken.go.jp) for further details.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BY327331 RIKEN full-length enriched, synovial fibroblasts Musmusculus cDNA clone L030041H17 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /cell_type="synovial fibroblasts"
/clone_lib="RIKEN full-length enriched, synovial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.2%; Score 78.8; DB 13; Length 337; 69.5%; Pred. No. 2.8e-07; Live 0; Mismatches 47; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1427 GATGTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   297 GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Mus musculus"
/mol_type="mRNA"
/db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /clone="L030044H15"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BY327331.1 GI:26517898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fibroblasts"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Siminaria,
Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           acknowledge.
```

ORIGIN

```
Batalov,S., Beisel,K.W., Blake,J.A., Bradt,D., Brusic,V., Chothia,C., Corban,L.B., Cousine,S., Dalla,B., Dragan,T.A., Fletcher,C.F., Forrest,A., Frazer,K.S., Gasterland,T., Gaziboldi,M., Gissi,C., Godzik,A., Gough,J., Grimmond,S., Gaziboldi,M., Gissi,C., Godzik,R.M., King,B.D., Kanai,A., Kuwaji,H., Kawasawa,Y., Kedzierski,R.M., King,B.L., Konagaya,A., Kuvochkin,I.V., Lee,Y., Lenhard,B., Lyons,P.A., Maglott,D.R., Maltais,L., Marchionni,L., McKenzie,L., Miki,H., Nagashima,T., Petrovsky,N., Pillai,R., Pontius,J.U., Qi,D., Ramachandran,S., Petrovsky,N., Pillai,R., Pontius,J.U., Qi,D., Ramachandran,S., Ravasi,T., Reed,J.C., Reed,D.J., Reid,J., Setou,M., Shimada,K., Sundelin,A., Schneider,C., Semple,C.A., Setou,M., Shimada,K., Verzdo,R., Wagner,L., Wahleetdet,C., Wang,Y., Watanabe,Y., Wells,C., Wilming,L.G., Wynshaw-Boris,A., Yanagisawa,M., Yang,I., Yang,L., Yang,L., Yang,L., Carninci,P., Hayatsu,N., Hirozane,Rishikawa,T., Komno,H., Nakamura,M., Aizawa,K., Sakazume,N., Sato,K., Shiraki,T., Waki,K., Kawai,J., Aizawa,K., Shinagawa,A., Yasunishi,A., Sakhinaya,Y., Saraki,D., Shibata,K., Itoh,M., Kagawa,I., Miyazaki,A., Sakai,K., Kawai,J., Aizawa,K., Itoh,M., Kagawa,I., Miyazaki,A., Sakai,K., Sasaki,D., Shibata,K., Shinagawa,A., Birney,B. and Hayashizaki,Y. Rogers,U., Birney,B. and Hayashizaki,Y. Rogers,U., Birney,B. and Hayashizaki,Y. Rogers,U., Birney,B. and Hayashizaki,Y. Rogers,U., Birney,B. Shibata,K., Shibata,K., Shibata,K., Shibata,K., Shibata,R., Sh
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Yoshinide Hayashizaki Laboratory for Genome Exploration Research Group, RIKEN Genomic Exporation Research Group, RIKEN Genomic Sciences Center(GSC), Yokohama Institute

The Institute of Physical and Chemical Research (RIKEN)

1-7-22 Suchiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan Tel: 81-45-503-9216

Email: 80-004-1-203-9216

Email: 80-004-1-203-9216

Email: 80-004-1-203-9216

Email: 90-006-1-203-9216

Email: 90-006-1-203-9216

Email: 90-006-1-203-9216

Email: 90-006-1-203-9216

Email: 90-006-1-203-9216

Email: 90-006-1-203-9216

Email: 90-006-1-303-9216

Email: 90-006-1-303-9216

Email: 90-006-1-303-9216

Email: 90-006-1-303-9216

Encountering Line Analysis of Full-Length Mouse CDNAs Compared with Hayashizaki, Y. Direct Submission

Computational Analysis of Full-Length Mouse CDNAs Compared With Computational Analysis of Full-Length Mouse CDNAs Compared Full-length CDNA Interapper-selected CDNAs to prepare full-length CDNA libraries for rapid discovery of new Geneme Res. 10 (10), 1617-1630 (2000)

RIKEN integrated sequence analysis (RISA) system--384 format sequencing pipeline with 384 multicapillary sequencer. Genome Res. 10 (11), 1757-1771 (2000)

Computer-based methods for the mouse full-length CDNA encyclopedia: real-time sequence clustering for construction of a nonredundant cDNA library. Genome Res. 11 (2), 281-289 (2001)

Control Library was prepared and sequenced in Mouse Genome Encyclopedia Project of Genome Exploration Research Group in Riken Encyclopedia Project of Genome Exploration Research Group in River Propers Mouse Center and Genome Science Laboratory in Riken December Pagence Control Library Enger Control 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          prepare mouse tissues.
Tissues were provided by Vassilis Aidinis (Biomedical Sciences
Research Center 'Al. Fleming' Institute of Immunology 14-16 Al.
Fleming street 16672 Vari, Greece ) whose assistance we gratefully
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Please visit our web site (http://genome.gsc.riken.go.jp) for further details.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /cell type="synovial fibroblasts"
/clone lib="RIKEN full-length enriched, synovial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /mol_type="mRNA"
/db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Yoshihide Hayashizaki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /clone="L030041H17"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fibroblasts"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         acknowledge.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2354683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12466851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE
PUBMED
```

FEATURES

JOURNAL

COMMENT

TITLE

```
/clone lib="Melton Mouse B16 5 Pancreas Library 2 M16B2" /note="Organ: Pancreas; Vector: pBluescript II SK; Site_I: Not!; Site_2: Sall; Library constructed using SuperScript Plasmid Library kit (Life Technologies). CDNA made by oligo-dT priming.Size-selected by column fractionation; average insert size 1.06kb. Primary library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BQ086753 359 bp mRNA linear EST 05-APR-2002 ih89d09.yl Melton Mouse E16 5 Pancreas Library 2 M16B2 Mus musculus cDNA clone IMAGE:5939369 5' similar to SW:SODM MOUSE P09671 SUPEROXIDE DISMUTASE [MN], MITOCHONDRIAL PRECURSOR ;, mRNA
                                                                                                                                                                                                                                  1367 ACTIATGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGGCAAGGAG 1426
                                                                                                            1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCACGACCACCATCAG 1366
                                                                                                                                                                       177 gegerőgaladokantanak a kereszak a kereszek elektek elektek elektek elektek elektek elektek elektek elektek
                                                                                                                                                                                                                                                                                      237 gcchacargaachaachtaachtaachtaagaaaaghtaacacaagachtagachaagaa 296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Butheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
1 (bases 1 to 359)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Harvard University, Howard Hughes Medical Institute
Dept of Molecular and Cellular Biology, 7 Divinity Ave, Cambridge,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Email: dmelton@biohp.harvard.edu
Library was constructed by Dr. Douglas Melton DNA sequencing by:
Library was constructed by Dr. Douglas Melton DNA sequencing
Washington University Genome Sequencing Center This clone is
available royalty-free through LINL; please contact the IMAGE
consortium (info@image.llnl.gov) for further information
Seq primer: -40RP from Gibco.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Melton, D., Brown, J., Kenty, G., Permutt, A., Lee, C., Kaestner, K., Lemishka, I., Scearce, M., Brestelli, J., Gradwohl, G., Clifton, S., Lemishka, I., Scearce, M., Brestelli, J., Gradwohl, G., Clifton, S., Schmitt, A., Marran, M., Pape, D., Wylle, T., Martin, J., Blistain, A., Schmitt, A., Theising, B., Ritter, E., Ronko, I., Bennett, J., Cardenas, M., Gibbons, M., McCann, R., Cole, R., Tsagareishvili, R., Williams, T., Jackson, Y. and Bowers, Y. Endocrine Pancreas Consortium
Unpublished (2000)
Other ESTS: ih89409.x1
                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Douglas Melton, Klaus H. Kaestner, & Hiroshi Inoue
Endocrine Pancreas Consortium
                                                          .
0
Length 353;
                                                          Indels
   2.2%; Score 78.8; DB 13; 69.5%; Pred. No. 2.8e-07;
                                                             47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /tissue type="Total pancreas"
/dev stage="Embryonic day 16.5"
/lab_host="TOP10"
                                                                                                                                                                                                                                                                                                                                                             1427 GAIGIGCITACCCAGGITAAGCITCAGTCIGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                        297 dargitacaacicaddicgciciticadccidcac 330
                                                          0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:10090"
/clone="IMAGE:5939369"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /mol_type="mRNA"
/strain="ICR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BQ086753.1 GI:20045957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /sex="Both"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tel: 617-495-1812
            Query Match
Best Local Similarity 69.5'
Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Fax: 617-495-8557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .. .359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BO086753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 6
BQ086753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCUS
                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                      g
```

ORIGIN

g 8 P ò

```
BB856053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 8
BB856053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Пр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mawmalia; Butheria; Rodentia; Sciurognathi; Muridae; Murinae; Musses I to 359)

Okazaki, Y., Furuno, M., Kasukawa, T., Adachi, J., Bono, H., Kondo, S., Nikaido, I., Osato, N., Saito, R., Suzuki, H., Yamanaka, I., Schonbach, C., Gojobori, T., Baldarelli, R., Hill, D.P., Bult, C., Bataloch, C., Golobori, T., Schriml, L. M., Kanaphin, A., Matsuda, H., Chothia, C., Corbani, L.E., Cousins, S., Dalla, E., Dragani, T.A., Fletcher, C.F., Forrest, A., Frazer, K.S., Gasterland, T., Gariboldi, M., Gissi, C., Godzik, A., Gough, J., Grimmond, S., Gustinich, S., Hirokawa, N., Jackson, I.J., Jarvis, E.D., Konagani, A., Kawaji, H., Kawasawa, Y., Kedzlerski, R.M., King, B.L., Konagaya, A., Nautchini, T., Dee, Y., Lenhard, B., Lyons, P.A., Maglott, D.R., Mattais, L., Marchionni, L., McKenzie, L., Miki, H., Nagashima, T., Petrovsky, N., Pallai, R., Pontlus, J.U., Miki, H., Nagashima, T., Redo, J.C., Reed, D.J., Petrea, G., Pesole, G., Sandelin, A., Schneider, C., Semple, C.A., Setou, M., Shimada, K., Sultana, R., Takenaka, Y., Taylor, M.S., Teasdale, R.D., Tomita, M., Verardo, R., Wangner, L., Wahlesel, C.A., Setou, M., Shimada, K., Veragis, V., Vang, Y., Yang, Yan
                                                                                                                                                                                                            1307 GCCTGGAGCCTCCATCTCCAAGGAGATCATGACCTTCACCACACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BY315073 RIKEN full-length enriched, osteoclast-like cell Musmusculus cDNA clone I420017L025', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                  1367 ACTIVATGITAACGGCCTCAACGCTGCCGAGGAGAGAGCTACTCGGCCGGTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                     164 GCCTACGTGAACAACCTCAACGCCACCAGGGAGAACTACCACGAGGCTCTGGCCAAGGGA 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Rogers, J., Birney, E. and Hayasnızakı, x.
Analysis of the mouse transcriptome based on functional annotation
of 60,770 full-length cDNAs
Nature 420, 563-573 (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sciences Center(GSC), Yokohama Institute
The Institute of Physical and Chemical Research (RIKEN)
1-7-22 Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan Tel: 81-45-503-9216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     aboratory for Genome Exploration Research Group, RIKEN Genomic
                                                                                                                                                                  Gaps
                                                                                                                                                               0;
                                                                                                  Length 359;
                                                                                                                                                     47; Indels
                                                                                            Score 78.8; DB 13;
Pred. No. 2.8e-07;
0; Mismatches 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    dargiracaacıcaddıcgereiricadeerideae 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Email: genome-res@gsc.riken.go.jp,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Yoshihide Hayashizaki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mus musculus (house mouse)
Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BY315073
BY315073.1 GI:26505410
unamplified."
                                                                                         2.2%;
                                                                                  Query Match
Best Local Similarity 69.5
Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12466851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 7
BY315073
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
```

TITLE

```
Aizawa,K., Akimura,Y., Taran, 30.1, Jr., Carninci, P., Fukuda,S., Aizawa,K., Akimura,Y., Ishli,Y., Itoh,M., Kawai,J., Konno,H., Miyazaki,A., Murata,M., Namura,K., Numazaki,R., Ohno,M., Sakai,K., Sakazume,W., Nomura,K., Numazaki,R., Ohno,M., Sakai,K., Sakazume,W., Sasaki,D., Sato,K., Shibata,K., Shizata,K., Direct Submission

Ghiraki,T., Tagami,M., Waki,K., Watahiki,A., Muramatsu,M. and
Hayashizaki,Y. Direct Submission

Computational Analysis of Full-Leapth Mouse CDNAs Compared with

Normalization and subtraction of cap-trapper-selected cDNAs to

prepare full-length cDNA libraries for rapid discovery of new

Gnees. Genome Res. 10 (10), 1617-1630 (2000)

RIKEN integrated sequence analysis (RISA) system--384-format

sequencing pipeline with 384 multicapillary sequencer. Genome Res.

10 (11), 1757-1771 (2000)

Computer-based methods for the mouse full-length cDNA

encyclopedia: real-time sequence clustering for construction of a

nonredundant cDNA library. Genome Res. 11 (2), 281-289 (2001)

connucter based methods for the mouse full-length cDNA

encyclopedia real-time sequence clustering for construction of a

nonredundant cDNA library. Genome Res. 11 (2), 281-289 (2001)

connucter sequences and denome Exploration Research Group in Riken

Division of Experimental Animal Research in Riken contributed to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ·.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1307 GCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACGAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1367 ACTIAIGITAACGGCCICAACGCIGCCGAGGAGAGCIACTCGGCCGCIGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BB856053 RIKEN full-length enriched, B16 F10Y cells Mus musculus cDNA clone G370031F20 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    prepare mouse tissues.

Tissues were provided by Takashi Ishikawa ( Department of Surgery 2 Yokohama City University 3-9 Fukuura, Kanazawa-ku, Yokohama 236-0004 Japan ) whose assistance we gratefully acknowledge.
Please visit our web site (http://genome.gsc.riken.go.jp) for further details.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi, Mammalia; Eutheria, Rodentia, Sciurognathi, Muridae, Murinae, Mus. 1 (bases 1 to 362)
Akimura, T., Arakawa, T., Carninci, P., Furuno, M., Hanagaki, T., Hayatsu, N., Hiramoto, K., Hiraoka, T., Hirozane, T., Imotani, K., Ishii, Y., Ito, M., Kawai, J., Kojima, Y., Konno, H., Kouda, M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /cell_type="osteoclast-like cell"
/clone_lib="RIKEN full-length enriched, osteoclast-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              174 GCGCTGGAGCCACACATTAACGCGCAGATCATGCAGCTGCACCACACAGAGCACCATGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              234 GCCTACGTGAACAACCTCAACGCCACGGAGGAGAAGTACCACGAGGCTCTGGCCAAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 359;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
2.2%; Score 78.8; DB 13;
Best Local Similarity 69.5%; Pred. No. 2.8e-07;
Matches 107; Conservative 0; Mismatches 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1427 GAIGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             294 GAIGTIACAACTCAGGICGCICTTCAGCCTGCAC 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /organism="Mus musculus"
/mol_type="mRNA"
/strain="C57BL/6J"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:10090"
/clone="1420017L02"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BB856053.1 GI:17097507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
```

```
2354683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE
PUBMED
                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                             REFERENCE
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Email: genome-reseggsc.riken.go.jp,
URL:http://genome.gescrriken.go.jp,
URL:http://genome.gsc.riken.go.jp,
URL:http://genome.gsc.riken.go.jp,
URL:http://genome.gsc.riken.go.jp,
URL:http://genome.gsc.riken.go.jp,
URL:http://genome.gsc.riken.go.jp,
Itoh,M., Konno,H., Okazaki,Y., Muramatsu,M. and Hayashizaki,Y.
Normalization and subtraction of cap-trapper-selected cDNAs to
prepare full-length cDNA libraries for rapid discovery of new
genes. Genome.Res. 10 (10), 1617-1630 (2000)
wagi,K., Fuliwake,S., Inoue,K., Togawa,Y., Izawa,M., Ohara,E.,
watahiki,M., Yoneda,Y., Ishikawa,T., Ozawa,K., Tanaka,T.,
Matsuura,S., Kawai,J., Okazaki,Y., Muramatsu,M., Inoue,Y., Kira,A.
and Hayashizaki,Y.
RIKEN integrated sequence analysis (RISA) system-384-format
sequencing pipeline with 384 multicapillary sequencer. Genome Res.
10 (11), 1757-171 (2000)
Sugahara,Y. and Hayashizaki,Y., Shibata,K., Itoh,M., Carninci,P.,
Sugahara,Y. and Hayashizaki,Y.
Computer-based methods for the mouse full-length cDNA
computer-based methods for the mouse clustering for construction of a
nonredundant cDNA library. Genome Res. 11 (2), 281-289 (2001)
Please visit our web site (http://genome.gsc.riken.go.jp) for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BY310981 BY310981 RIKEN full-length enriched, stroma cell Mus musculus cDNA clone I320017112 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAACGAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1367 ACTIAIGITAACGGCCICCAACGCIGCCGAGGAGCIACTCGGCCGCTGIGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        258 gécriacérgaaderteaadécaedégaégagagradeadégagécregages 317
                                                                                                                                                                                                                                                       Unpublished (2001)
Contact: Yoshihide Hayashizaki
Contact: Yoshihide Hayashizaki
Laboratory for Genome Exploration Research Group, RIKEN Genomic
Sciences Center(SC), Yokohama Institute
The Institute of Physical and Chemical Research (RIKEN)
1-7-22 Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan
Tel: 81-45-503-9222
Matsuyama, T., Nakamura, M., Nishi, K., Nomura, K., Numasaki, R., Okazaki, Y., Okido, T., Saito, R., Sakai, C., Sakai, K., Sakazume, N., Sasaki, D., Sato, K., Shibata, K., Shinagawa, A., Shiraki, T., Sogabe, Y., Suzuki, H., Tagawa, A., Takahashi, F., Takaku-Akahira, S., Tanaka, T., Tomaru, A., Toya, T., Watahiki, A., Yasunishi, A., Muramatsu, M. and Hayashizaki, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /cell_type="B16 F10Y cells"
/clone_lib="RIKEN full-length enriched, B16 F10Y cells"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 362;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 2.2%; Score 78.8; DB 10; Best Local Similarity 69.5%; Pred. No. 2.8e-07; Matches 107; Conservative 0; Mismatches 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   chrcrrachcrchddrccrcrrradcrigad 351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Mus musculus"
/mol_type="mRNA"
/strain="C57BL/6J"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:10090"
/clone="G370031F20"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BY310981
BY310981.1 GI:26501318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        81-45-503-9216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      e mouse tissues.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BY310981
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 9
                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
```

```
Name materials (nates notes; assures, r. Adachi, J. Bono, H. Kondo, S. Mariamentone according to the materials (notes; assures, r. Adachi, J. Bono, H. Kondo, S. Mariamentone, C. Gorjobci, T. Balco, R. Sarlo, R. Sarlo, H. Sarlo, R. Sarlo
```

```
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                        MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 11
CB274248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Carachi, Y. Barukawa, T. Adachi, J., Bono, H., Kondo, S., Nikaido, I., Osato, N., Saito, R., Suzuki, H., Yamanaka, I., Kiyosawa, H., Yagi, K., Tomaru, Y., Hasegawa, Y., Nogami, A., Kiyosawa, H., Yagi, K., Tomaru, Y., Hasegawa, Y., Nogami, A., Schonbach, C., Gojobori, T., Baldaralli, R., Hill, D.P., Bult, C., Hume, D.A., Quackenbush, J., Baldaralli, R., Hill, D.P., Brusic, V., Chothia, C., Corban, L.E., Cousins, S., Dalla, E., Dragani, T.A., Fletcher, C.F., Forrest, A., Frezer, K.S., Gaasterland, T., Garinchia, C., Godsik, A., Frezer, K.S., Gaasterland, T., Gustincich, S., Hirokawa, N., Jackson, I.J., Jarvis, E.D., Kanagani, T.A., Kawaji, H., Kawasawa, Y., Kedzierski, R.M., King, B.L., Konagaya, A., Kawaji, H., Kawasawa, Y., Lenhard, B., Lyons, P.A., Majlott, D.R., Maltais, L., Marchdonni, L., Wckenzie, L., Miki, H., Nagashima, T., Namata, K., Okido, T., Pavan, W.J., Pertea, G., Pesole, G., Sandelin, A., Schneider, P., Pontius, J. U., Qi, D., Ramachandran, S., Ravasi, T., Wagner, L., Wallested, C., Setul, M., Shimada, K., Sandelin, A., Schneider, C., Semple, C.A., Setul, M., Watanabe, Y., Wang, Y., Watanabe, Y., Wang, L.G., Wander, C., Mahaw-Boris, A., Yanagisawa, M., Yang, I., Hayatsu, M., Hirozane-Kishikawa, T., Konno, H., Nakamura, M., Sato, K., Shiraki, T., Konno, H., Waterston, R., Lander, E.S., Analysis of the mouse transcriptome based on functional annotation of 60,770 full-length cDNa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              254 Géctracergaacerceacecececes as a seconde de consecuencia d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Butheria, Rodentia, Sciurognathi, Muridae, Murinae, Mus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       194 GCGCTGGAGCCACACATTAACGCGCAGATCATGCAGCTGCACCACACGAAGCAACCATGCC
                                                                                                                                                                                                                                                                                                                                                                            /cell_type="stroma cell"
/clone_lib="RIKEN full-length enriched, stroma cell"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BY300950
BX300950 RIKEN full-length enriched, 14.5 days embryo RP+/+
Rathke's pouches Mus musculus cDNA clone K720012M21 5', mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 13; Length 363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1427 GAIGIGCITACCCAGGITAAGCITCAGICIGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                314 GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 78.8; DB
Pred. No. 2.8e-
0; Mismatches
                                                                                                                                               organism="Mus musculus"
                                                                                                                                                                                                                                                                                         /db_xref="taxon:10090"
/clone="1320017112"
                                                 socation/Qualifiers
                                                                                                                                                                                                /mol_type="mRNA"
/strain="C57BL/6J"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BY300950.1 GI:26491287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.2%;
69.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (bases 1 to 372)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                       .363
further details.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sednence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 107;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 10
                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BY300950
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOURCE
```

ò g à

```
Email: genome-resegsc.riken.go.jp,
URL:http://genome.gsc.riken.go.jp,
Alzawa,K., Akimura,T., Arakawa,T., Carninci,P., Fukuda,S.,
Hirozane,T., Imotani,K., Ishii,Y., Itoh,M., Kawai,J., Komun,H.,
Miyazaki,A., Murata,M., Nakamura,M., Nomura,K., Numazaki,R.,
Ohno,M., Sakai,K., Sakazume,N., Sasaki,D., Sato,K., Shibata,K.,
Shiraki,T., Tagami,M., Waki,K., Watahiki,A., Muramatsu,M. and
Hayashizaki,Y. Direct Submission
Computational Analysis of Full-Length Mouse cDNAs Compared with
Human Genome Sequences Mamm. Genome. 12, 673-677 (2001)
Normalization and subtraction of cap-trapper-selected cDNAs to
prepare full-length cDNA libraries for rapid discovery of new
genes. Genome Res. 10 (10), 1617-1630 (2000)
RIKEN integrated sequence analysis (RIRA), system-384-format
                                                               Laboratory for Genome Exploration Research Group, RIKEN Genomic Sciences Center(GSC), Yokohama Institute
For Institute of Physical and Chemical Research (RIKEN)
1-7-2 Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan Tel: 81-45-503-9216
Fax: 81-45-503-9216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CB274248 467 bp mRNA linear EST 24-FEB-2003 mai90f09.yl McCarrey Eddy round spermatid Mus musculus cDNA clone IMAGE:6448769 5' similar to SW:SODM_MOUSE P09671 SUPEROXIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               encyclopedia: real-time sequence clustering for construction of a connectedudant cDNA library. Genome Res. 11 (2), 281-289 (2001) CDNA library was prepared and sequenced in Mouse Genome Encyclopedia Project of Genome Exploration Research Group in Riken Genomic Sciences Center and Genome Science Laboratory in Riken. Division of Experimental Animal Research in Riken contributed to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sequencing pipeline with 384 multicapillary sequencer. Genome Res. 10 (11), 1757-1771 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67 GCCTACGTGAACAACCTCAACGCCACCGAGGAAGTACCACGAGGCTCTGGCCAAGGGA 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /dev_stage="14.5 days embryo RP+/+"
_clone_lib="RIKEN full-length enriched, 14.5 days embryo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        prepare mouse tissues.

Tissues were provided by Michelle Brinkmeier and Sally Camper (Dept. Human Genetics University of Michigan Medical School 4301 MSRB 3 1500 W. Medical Center Dr. Ann Arbor,MI 48109-0638 USA) whose assistance we gratefully acknowledge.

Please visit our web site (http://genome.gsc.riken.go.jp) for further details.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7 dederide de de caractar a de contra de contr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Computer-based methods for the mouse full-length cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 13; Length 372;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     47; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1427 GAIGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'tissue_type="Rathke's pouches"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              127 GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.2%; Score 78.8; DB 13
69.5%; Pred. No. 2.8e-07;
Live 0; Mismatches 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RP+/+ Rathke's pouches"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /mol_type="mRNA"
/db_xref="taxon:10090"
/clone="K720012M21"
Contact: Yoshihide Hayashizaki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 107; Conservative
```

```
CA889637 566 bp mRNA linear EST 20-DEC-2002
B0154B09-5N NIA Mouse Neural Stem Cell (Differentiated) cDNA
Library (Long) Mus musculus cDNA clone NIA:B0154B09 IMAGE:30098996
S,' mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 566)
Piao,Y., Dudekula,D.B., Qian,Y., Martin,P.R., Aiba,K., Vescovi,A.L. systematic Analyses of NIA Mouse Neural Stem Cell (Differentiated)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 вовичвня 11 pp mRNA linear EST 20-DEC-2001
0273-74 Mouse E14.5 retina lambda ZAP II Library Mus musculus CDNA,
mRNA sequence.
                                                                                                                                                                                                                                                                                                                                       Eukarrota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus. 1 (bases 1 to 511)
Mu, X., Zhao, S., Pershad, R., Hsieh, T.-F., Scarpa, A., Wang, S.W., White, R.A., Beremand, D.D., Thomas, T.L., Gan, L. and Klein, W.H. Gene expression in the developing mouse retina by EST sequencing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /tissue type="neural retina"
/dev stage="embryonic day 14.5 post-fertilization"
/clone_lib="Mouse E14.5 retina lambda ZAP II Library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 511;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11812828
Contact: Klein WH
Contact: Klein WH
Department of Bicchemistry and Molecular Biology
University of Texas M.D. Anderson Cancer Center
Box 117, 1515 Holcombe Blvd., Houston, TX 77030, USA
Fal: 713 792 3646
Fax: 713 790 0329.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and microarray analysis
Nucleic Acids Res. 29 (24), 4983-4993 (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 78.8; DB 12;
Pred. No. 2.8e-07;
0; Mismatches 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1427 GAIGIGCTIACCCAGGITAAGCTICAGICTGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         334 GAIGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 367
240 GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="mRNA"
/db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mus musculus (house mouse)
Mus musculus
                                                                                                                                                                                                                                                                                           Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CA889637.1 GI:27341186
                                                                                                                                                                                                                                       BG804894.1 GI:17951820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity 69.55
Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                            Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21671825
                                                                                                                                                                                                                 BG80489
                                                                                                                                                                                                                                                                        EST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                         LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 13
CA889637
                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE
PUBMED
                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                               VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                                  RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                              BG804894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /tissue_type="round spermatids, pooled from multiple mice"
/tissue_type="found spermatids, pooled from multiple mice"
/dev_stage="60 day"
/lab_host="DH10B (phage-resistant)"
/clone_lib="McCarrey Bddy round spermatid"
/clone_is="mcCarrey Bddy round spermatid"
/note="Organ: testies; Vector: pBluescript SK+
directionally cloned using 5' linkers 5'-AATTCGGCACGAG-3'
and 5'-CTCGTGCG-3'. Size selection of $400bp material
gives average insert size ranging from 1-2 kb. Library was
mass excised (from lambda-UnizAR-XR) and resulting
single-stranded phagemids were prepped and tranformed
into DBlubs. Library contains 98.5% recombinants:
References: J. Androl. 20:635-639 and Gene 25:63-269.
Library constructed and donated by J. McCarrey, Rh.D.
(Southwest Foundation for Biomedical Research, Dept. of
Genetics); excision done by E.M. Eddy, Ph.D. (National
Institutes of Health, National Institute of Environmental
Health Sciences). Original lambda-based library is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1367 ACTTATGTTAACGGCCTCCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180 gectracererakeraecterakedeereerekaakaaraetaeraeaageereradeeereerakaasa 239
                                                                                                                                                 Mus musculus
Eukaryota, Metazoa; Chordata, Craniata, Vertebrata; Euteleostomi;
Bukaryota, Metazoa; Chordata, Crinidae, Muridae; Musinae; Mus.
1 (Dases 1 to 467)
McCarrey, J., Eddy, M., Marra, M., Hillier, L., Clifton, S., Pape, D., Martin, J., Wylie, T., Dante, M., Bowers, Y., Theising, B., Gibbons, M., Ritter, E., Tsagareishvili, R., Ronko, I., Maguire, L., Kennedy, S., Bennett, J., Waterston, R. and Wilson, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Library constructed and donated by J. McCarrey, Ph.D. (Southwest Foundation for Biomedical Research, Dept. of Genetics) - excision done by E.M. Eddy, Ph.D. (National Institutes of Health, National Institute of Environmental Health Sciences).

MGI:2072729
Seq primer: Primer name ambiguous
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 decendendecencacantrandecedendarearidendecacerdecacandedareed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Washington University School of Medicine
4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108, USA
Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
           DISMUTASE [MN], MITOCHONDRIAL PRECURSOR ;, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.2%; Score 78.8; DB 14; Length 467; 69.5%; Pred. No. 2.8e-07; ive 0; Mismatches 47; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             available through ATCC, catalog #63423.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                 Contact: McCarrey/Eddy NIBHS Mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Mus musculus"
/mol_type="mRNA"
/strain="CD-1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    High quality sequence stop: 427.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'db_xref="taxon:10090"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       clone="IMAGE:6448769"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Email: est@watson.wustl.edu
                                                                                                                           Mus musculus (house mouse)
                                                    CB274248
CB274248.1 GI:28464571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /sex="male"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                         Unpublished (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                  NIEHS Mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 107;
                                                                                                        EST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bource
                                                                                                                                                          ORGANISM
                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                AUTHORS
                                                    ACCESSION
                                                                                                                                                                                                                                       REFERENCE
                                                                          VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
```

ð

ò g ò

; 0

JOURNAL COMMENT

source

FEATURES

```
/note="Vector: pSPORT1; Site 1: Not 1; Site 2: Sal 1; Five libraries representing E10.571.5 pancreatic bud, E16.5 pancreas, newborn pancreas, adult pancreas, and adult islets of Langerhans were seperately constructed using SuperScript Plasmid Library kit (Life Technologies). cDNA was made by oligo-dT priming and size-selected by column fractionation. Libraries were amplified once on solid support and plasmid DNA from each library DNA was normalized by method #4 from Bonaldo, Lennon, and Soares 1996 Genome Research 6:791-806; O.5 microgram single-stranded mixed library plasmid DNA was nicrogram single-stranded mixed library plasmid DNA was incrogram product representing mixed library lasmid DNA was nicrogram single-stranded mixed library plasmid DNA was mixed with single-stranded mixed library plasmid DNA was mixed library lasmid DNA was mixed library plasmid DNA was mixed library plasmid DNA was mixed library plasmid DNA was mixed library lasmid DNA was lasmid DNA was mixed library lasmid DNA was mixed library lasmid DNA was lasmid DNA w
                                                                                                                                                          Chordata, Craniata, Vertebrata, Buteleostomi,
Rodentia, Sciurognathi, Muridae, Murinae, Mus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Library was constructed by Dr. Douglas Melton DNA sequencing by:
Washington University Genome Sequencing Center For information on
obtaining a clone please contact: Juliana Brown
(brown@fas.harvard.edu)
MGI:1947051 This sequence now available from the IMAGE consortium,
for clone orders contact: info@image.llnl.gov
Seq primer: -40RP from Gibco
High quality sequence stop: 413.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Harvard University, Howard Hughes Medical Institute
Dept of Molecular and Cellular Biology, 7 Divinity Ave, Cambridge,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          were isolated by hydroxyapatite
                                                                                                                                                                                                                                                     Melton,D., Brown,J., Kenty,G., Permutt,A., Lee,C., Kaestner,K., Lemishka,I., Scearce,M., Brestelli,J., Gradwohl,G., Clifton,S., Hillier,L., Marra,M., Pape,D., Wylle,T., Martin,J., Blistain,A., Schmitt,A., Theising,B., Roke,E., Ronko,I., Bennett,J., Cardens,M., Gibbons,M., McCann,R., Cole,R., Tsagareishvili,R., Milliams,T., Jackson,Y. and Bowers,Y.
Budocrine Pancreas Consortium
Unpublished (2000)
Other_ESTs: ic86g07.x1
Contact: Douglas Melton,Klaus H. Kaestner, & Hiroshi Inoue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /sex="Both for embryonic & newborn, male for adult and adult islet"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /dev stage="Embryonic day 10.5, E12.5, E16.5, newborn, adult, mixed"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACGAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /lab_host="DH10B"
/clone lib="Melton Normalized Mixed Mouse Pancreas 1
N1-MMSI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         chromatography and used to make this library."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2.2%; Score 78.8; DB 12; Length 580; 69.5%; Pred. No. 2.8e-07; Indels 0; Mismatches 47; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Mus musculus"
/mol_type="mRNA"
/strain="ICR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fax: 617-495-8557
Email: dmelton@biohp.harvard.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (unhybridized) plasmids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'db_xref="taxon:10090"
'clone="IMAGE:5660725"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Endocrine Pancreas Consortium
                                                                               Mus musculus (house mouse)
Mus musculus
               GI:15689003
                                                                                                                                                       Eukaryota, Metazoa,
Mammalia, Eutheria,
1 (bases 1 to 580)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 2.2
Best Local Similarity 69.5
Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   617-495-1812
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .580
               BI713308.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 02138
                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                             AUTHORS
           VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                   SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BI713308 580 bp mRNA linear EST 12-MAR-2002 ic86g07.yl Melton Normalized Mixed Mouse Panoreas 1 N1-MMS1 Mus musculus cDNA clone IMAGE:5660725 5' similar to SW.SODM MOUSE P09671 SUPEROXIDE DISMUTASE [MN], MITOCHONDRIAL PRECURSOR;, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            insert size is about
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Centricon 100. Then, the CDNAs were amplified by long-range high fidelity PCR using Ex Taq polymerase (Takara) with a primer Salt+6. The products were purified by phenol/chloroform and Centricon 100. The CDNAs were digested with Sall and NotI enzymes and cloned into Sall/NotI site of pSPORTI plasmid vector. The DH10B E. coli host was transformed with the ligation mixture by the standard chemical method. The average insert size is about 3.2 kb. The library was constructed by Yulan Piao."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            203 édecrégadedacacaritaadededaaricarecacrecacacacacadaadedededages 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        263 GCCTACGIGAACAACCTCAACGCCACCGAGGAGAAGTACCACGAGGCTCTGGCCAAGGGA 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Gaps
                                                                                              National Institute on Aging/National Institutes of Health 313 Cassell Drive, Suite 4000, Baltimore, MD 21224-6820, USA Email: cdna@lgun.grc.nia.nih.gov Plate: B0154 row: B column: 09 Seq primer: -21M13 Reverse High quality sequence stop: 566 POLYA=No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.2%; Score 78.8; DB 14; Length 566; 69.5%; Pred. No. 2.8e-07; ive 0; Mismatches 47; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               db_xref="niaEST:B0154B09-5N"
|db_xref="taxon:10090"
|clone="NIA:B0154B09 IMAGE:30098996"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Mus musculus"
/mol_type="mRNA"
/strain="CD1"
                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /dev_stage="Adult"
/lab_host="DH10B"
                                                                    Contact: Dawood B. Dudekula
CDNA Library (Long)
                                         Unpublished (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches 107; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                              . 566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
```

Query Match Best Local

ò g 6 1367 ACTIAIGITAACGGCCTCAACGCTGCCGAGGAGACTACTCGGCCGCTGTGGGCAAGGAG 1426

ð

sequence. BI713308

ACCESSION

DEFINITION RESULT 14 BI713308 LOCUS

110 GCGCTGGAGCCACACATTAACGCGCAGATCATGCAGCTGCACCACACAAGCACCATGCG

Gaps

```
ö
                                                                                                                                                                                                                                       g
                                                               ద
                                                                                                            ð
                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              References: J. Androl. 20:635-639 and Gene 25:263-269.
Library constructed and donated by J. McCarrey, Ph.D.
Gouthwest Foundation for Biomedical Research, Dept. of
Generics); excision done by E.M. Eddy, Ph.D. (National
Institutes of Health, National Institute of Environmental
Health Sciences). Original lambda-based library is
                                                                                                                                                                                                                   BU743935
mai50e03.yl McCarrey Eddy round spermatid Mus musculus cDNA clone
IMAGE:6449477 5' similar to SW:SODM MOUSE P09671 SUPEROXIDE
DISMUTASE [MN], MITOCHONDRIAL PRECURSOR;, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                 Mus musculus
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Bukaryota, Metazoa, Chordata, Sciurognathi, Muridae, Murinae, Mus.
1 (Dases 1 to 589)
McCarrey, J., Eddy, M., Marra, M., Hillier, L., Clifton, S., Pape, D.,
McTin, J., Wylie, T., Dante, M., Bowers, Y., Theising, B., Gibbons, M.,
Ritter, E., Tsagareishyll, R., Ronko, I., Maguire, L., Kennedy, S.,
Bennett, J., Waterston, R. and Wilson, R.
170 GCCTACGTGAACAACCTCAACGCCACCGAGGAAGTACCACGAGGGTCTGGCCAAGGGA 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This clone is available royalty-free through LLNL , contact the IMAGE Consortium (info@image.llnl.gov) for further information.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                single-stranded phagemids were prepped and tranformed into DH10B. Library contains 98.5% recombinants.
References: J. Androl. 20:615-639 and Gene 25:261-260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Health Sciences). Original lambda-base
available through ATCC, catalog #63423.
                                                                        1427 GAIGIGCITACCCAGGITAAGCITCAGICIGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Washington University School of Medicine
                                                                                                230 GATGTTACAACTCAGGTCGCTCTTCAGCCTGCAC 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Seq primer: -40RP from Gibco
High quality sequence stop: 428.
Location/Qualifiers
1. .589
/ organism="Mus musculus"
/mol type="mRNA"
/strain="CD-1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Contact: McCarrey/Eddy NIEHS Mouse NIEHS Mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:10090"
/clone="IMAGE:6449477"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Email: est@watson.wustl.edu
                                                                                                                                                                                                                                                                                                                                                                            Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                BU743935
BU743935.1 GI:23692080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sex="male"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NIEHS Mouse
Unpublished (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Tel: 314 286 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MGI:2093789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                            LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
                                                                                                                                                                                      RESULT 15
BU743935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                  g
                                 음
                                                                            ð
```

ö

Gaps

. ,

Length 589; Indels 0

Query Match 2.2%; Score 78.8; DB 13; Best Local Similarity 69.5%; Pred. No. 2.8e-07; Matches 107; Conservative 0; Mismatches 47;

Search completed: April 1, 2004, 21:52:24 Job time : 9345 secs

```
Sequence 14, Appl
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 1348, Ap
Patent No. 5240847
Sequence 6, Appli
Sequence 27, Appli
Sequence 17, Appli
Sequence 17, Appli
Sequence 17, Appli
Sequence 1, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 29, Appl
Sequence 29, Appl
Sequence 2, Appli
Sequence 2, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 29, Appli
Patent No. 5240847
Patent No. 5240847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Patent No. 5240847
Patent No. 5240847
Patent No. 5240847
                                                                      (without alignments)
7877.372 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 14, Appl
                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                     1 tootgttgataatotttota.....aagagottgaaooattgtag 3632
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Description
                                                         April 1, 2004, 10:57:14 ; Search time 255.87 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Patent No. Patent No.
                                                                                                                                                                                                                                                                                       Issued Patents NA:*
: /cgn2_6/ptodata/2/ina/5A_COMB.seq:*
: /cgn2_6/ptodata/2/ina/5B_COMB.seq:*
: /cgn2_6/ptodata/2/ina/6A_COMB.seq:*
: /cgn2_6/ptodata/2/ina/6B_COMB.seq:*
: /cgn2_6/ptodata/2/ina/pcTUS_COMB.seq:*
: /cgn2_6/ptodata/2/ina/pcTuS_COMB.seq:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-075-019-1
US-09-075-019-1
US-08-86-348-27
US-08-126-109-1
US-09-075-019-8
US-09-075-019-8
US-09-329-972-29
US-09-339-972-29
US-08-023-980B-2
US-08-08-953A-2
US-09-091-097-7
US-09-091-097-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-151-052-1
US-09-023-655-1348
                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-091-097-5
US-08-927-230A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-08-232-463-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5240847-16
US-09-091-097-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-232-463-14
                                                                                                                                                                         682709 segs, 277475446 residues
                                                                                                                                                                                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                    OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5240847-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5240847-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5240847-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5240847-1
                                                                                                                                          IDENTITY NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                  US-09-727-855B-1
3632
                                                                                                                                                                                                                                                                                                                                                                                                                                    Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4.27
4.27
4.27
4.27
4.27
4.27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               70.8
66.2
665.2
663.6
663.6
662.8
662.8
662.4
662.4
660.8
                                                                                                                                                                                                                                                                                        Database :
                                                                                                                        Sequence:
                                                                                                                                                                        Searched:
                                                          Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                    Result
No.
```

```
38, Appl
39, Appl
31, Appl
6 1, Appl
37, Appl
137, Appl
143, Appl
18022, Ap
                                                  Sequence 34, Appl
Sequence 39, Appl
Sequence 33, Appl
Sequence 2, Appl
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 37, Appli
                42, Appl
23, Appl
5240847
                                                                                                                                                                                     Sequence 13, A
Sequence 41, A
Sequence 40, A
                Sequence 4
Sequence 2
Patent No.
                                                                                                                                      Sequence 8
Sequence 8
Sequence 7
Sequence 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY: USA

ZIP: 22313-0299

ZIP: 22313-0299

COMPUTER READBLE FORM:

MEDIUW TYPE: Floppy disk

COMPUTER: IBM PC Compatible

OPERATING SYSTEM: PC-DOS/NS-DOS

SOFTWARE: PAtentin Release #1.0, Version #1.25

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/232,463

FILING DATE:

CLASSIFICATION: 435

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/07/935,313

PRILING APPLICATION NUMBER: US/07/935,313
                                                                                                                                                                                                                                                                                                     Sequence 14, Application US/08232463
| Patent No. 5670367
| GENERAL INFORMATION:
| APPLICANT: SCHEIFLINGER, F. |
| APPLICANT: PALMER, F. G. |
| TITLE OF INVENTION: RECOMBINANT FOWLPOX VIRUS NUMBER OF SEQUENCES: 52
| CORRESPONDENCE ADDRESS: |
| ADDRESSEE: Foley & Lardner |
| STREET: 1800 Diagonal Road, Suite 500 |
| CITY: Alexandria
                                                                                                                      US-08-133-711-37
US-08-133-711-43
US-09-252-991A-8022
US-09-252-991A-7972
US-09-252-991A-8294
US-09-091-097-13
  US-08-133-711-41

US-08-133-711-42

US-09-214-909-23

5240847-5

US-08-133-711-34

US-08-133-711-38

US-08-133-711-39

US-08-133-711-39
                                                                                                US-09-103-840A-2
US-09-103-840A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE:
APPLICATION NUMBER: EP 91 114 300.6
FILING DATE: 26-AGG-1991
ATTORNEY, AGENT INFORMATION:
NAME: BENT, Stephen A.
REGISTRATION NUMBER: 29 768
REFERENCE/DOCKET NUMBER: 30472/114 IMMU
TELECOMMUNICATION INFORMATION:
TELEPHONE: (703) 836-9300
TELEFAX: (703) 683-4109
                                                                                                                                                                                                            US-08-133-711-40
495 1 1 621 4 621 6 491 1 621 6 491 1 491 1 491 1 491 1 1 4403765 4 4411529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEX: 899149
INFORMATION FOR SEQ ID NO: 14:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7218 base pairs
   ΥĀ
                                                                                                                                                                                                                                                                                               JS-08-232-463-14
             LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        STATE:
  2222
3322
3322
3322
4444
4444
4444
4445
4444
4445
4444
```

Length 7218;

.. H

DB

2.6%; Score 94.8;

TYPE: nucleic acid STRANDENBESS: single TOPOLOGY: linear IMMEDIATE SOURCE: CLONE: PTSGPt-F1S

US-08-232-463-14

Query Match

```
SEQUENCE CHARACTERISTICS
                                                                                                  CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY:
LOCATION:
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STATE: Ma
                                                                                                               ;
US-09-091-097-5
                                                                                                  NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 3
                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                  1215 TAACCCATCTCATCTCCTGGACATTCTTTACTGGAAACGTATCTTGTCCTTGGTTTTTC 1274
                                                                1155 TCTAGCTCTTCGTCCTTTCTGTCCTGCTCTTTGTTGTTGATATTCAGCTCGATAGAC 1214
                                                                                                                                                                                                                                                                                              1035 CICCIGCIGCITICCAGAICAGGGCAAAGCAIACCCIGCCIGAGCIICCIIACG 1094
                 0
                                           915 TCCATCTTAAGCTCATTCTCATCTAACCGACTCATCTCGTTCCCATCATTCCCATCATTC 974
                 Gaps
                 ö
    Best Local Similarity 3.1%; Pred. No. 3.3e-18;
Matches 12; Conservative 255; Mismatches 117; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION: ANTIGENIC PROTEIN ORGINATING IN TITLE OF INVENTION: MALASSEZIA NUMBER OF SEQUENCES: 58 CORRESPONDENCE ADDRESS: ADDRESSEE: BIRCH, STEWART, KOLASCH & BIRCH, LLP STREET: PO BOX 747 CITY: FALLS CHURCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ZIF: 22040-0747

ZIF: 22040-0747

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
GOTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/091,097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATTORNEY/ACENT INFORMATION:
NAME: WEINER, MARC S.
RECISTRATION NUMBER: 32,181
REFERENCE/DOCKET NUMBER: 1422-0346P
TELECOMUNICATION INFORMATION:
TELEPHONE: 703-205-8000
TELEFRAX: 703-205-8050
                                                                                                                                                                                                                                                                                                                                                                                            1275 ITGGCTTTGGTTGAAATTCCTCT 1298
                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 2
US-09-091-097-5
; Sequence 5, Application US/09091097
; Patent No. 6432407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OKADO, TAKASHI
YACIHARA, TOWOKO
KURODA, MASANOBU
ONISHI, YOSHIMI
KATO, IKUNOSHIN
AKIYAMA, KAZUO
YASUEDA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YAMAGUCHI, HIDEYO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TAKESAKO, KAZUTOH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TELEFAX: 703-205-8050 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
APPLICANT: TAKESA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CITY: FAI
STATE: VA
COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                        CD
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                            g
                                                                                                                                    a
                                                                                                                                                                 ð
                                                                                                                                                                                                                        à
                                                                                                           ò
```

```
1364
                                                                                                                                                                                                                                                                                                                                                                                                        1365 AGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGG 1424
                                                                                                                                                                                                                                                                                                                                                          so Ardcecredadeccerrrarcreraaddadarcardadcecceaccacaadaacacacaca 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                   110 AGACCTACGTGAACAACCTCAACGCCGAGAAGGCGTAACGCTGAGGCGACGGCCGA 169
                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-927-230A-1
; Sequence 1, Application US/08927230A
; Patent No. 5985633
; GENERAL INFORMATION:
; APPLICANT: Nick et al.
; TITLE OF INVENTION: Human Manganese Superoxide Dismutase Mutants
                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                      Length 728;
                                                                                                                                                                                                                      Query Match
2.3%; Score 84.2; DB 4; Length 7
Best Local Similarity 71.9%; Pred. No. 1.2e-15;
Matches 110; Conservative 0; Mismatches 43; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: PACENTIN PC_DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/907 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1425 AGGATGTGCTTACCCAGGTTAAGCTTCAGTCTG 1457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            170 ACGACGTGCTTAAGCAGATCCAGCTGCAGAGTG 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS:
ADDRESSEB: LAHIVE & COCKFIELD,
STREET: 28 State Street, Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE:
ATTORNEY/AGENT INFORMATION:
MAME: Remillard, Jane
REGISTRATION NUMBER: 38,872
REFERENCE/DOCKET NUMBER: UFO-
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617)227.7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPPRATING SYSTEM: PC-DOS/MS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELEFAX: (617)742-4214
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                   TOPOLOGY: linear MOLECULE TYPE: CDNA to mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 813 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
LENGTH: 728 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Massachusetts
: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            43..708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          linear
                                                                                                                                                            1..618
```

임 õ g

```
1367 ACTIATGITAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                      211 GCCTACGTGAACAACCTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 270
                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
APPLICANT: Cocks, Benjamin G.
APPLICANT: Cocks, Benjamin G.
APPLICANT: Jeffrey G. Stuart
APPLICANT: Jeffrey J. Seilhamer
TITLE OF INVENTION: COMPOSITION FOR THE DETECTION OF BLOOD CELL GENE
TITLE OF INVENTION: EXPRESSION
NUMBER OF SEQUENCES: 1508
CORRESPONDENCE ADDRESS:
ADDRESSEE: INCYTE PHARMACEUTICALS, INC.
STREET: 3174 PORTER DRIVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  175 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACGCAAGCACGCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 829;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ZIP: 94304
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/NS-DOS
SOFFWARE: Word Perfect 6.1 for Windows/MS-DOS 6.2
CURRENT APPLICATION NUMBER: US/09/023,655
                                                                                                                                                                                                        1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                 271 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.0%; Score 74; DB 4;
67.5%; Pred. No. 2e-12;
tive 0; Mismatches 5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PA-0001 US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE:
CLASSIFICATION:
ATTONNEY/AGENT INFORMATION:
NAME: Zeller, Karen J.
REGISTRATION NUMBER: 37,071
REPERENCY/DOCKET NUMBER: PA-0001
TELEPHONE: (650) 845-0555
INFORMATION FOR SEQ ID NO: 1348:
SEQUENCE CHARACTERISTICS:
LENGTH: 829 base pairs
TYPE: nucleic acid
TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                               RESULT 5
US-09-023-655-1348
; Sequence 1348, Application US/09023655
; Patent No. 6607879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 2.08
Best Local Similarity 67.59
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HEREWITH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CITY: PALO ALTO STATE: CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENBANK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: HI CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; CLONE: 934710
US-09~023-655-1348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TOPOLOGY: line
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LIBRARY:
                                                                                                                                                          g
                                                                    셤
                                                                                                                    ò
                                                                                                                                                                                                      \dot{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                      ö
                                                                                                                                                                          1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                          1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                          210
                                                                                                                                                                                                                                                                                                   211 GCCTACGTGAACATGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                             151 GCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACGCAGCAGCACCACGCG
                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Nick et al.
TITLE OF INVENTION: Human Manganese Superoxide Dismutase Mutants
NOMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVUE & COCKFIELD
STREET: 28 State Street, Floor 24
                                                                                                                                        .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ·.
                                                                                    Query Match 2.0%; Score 74; DB 2; Length 813; Best Local Similarity 67.5%; Pred. No. 2e-12; Matches 104; Conservative 0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 2.0%; Score 74; DB 3; Length 813; Best Local Similarity 67.5%; Pred. No. 2e-12; Matches 104; Conservative 0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/151,052
FILING DATE:
CLASSIPICATION:
                                                                                                                                                                                                                                                                                                                                                   1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                          271 GATGTTACAGCCAGATAGCTCTTCAGCCTGCAC 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBB PC comparible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UFJ-001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/927,230
FILING DATE: September 10, 1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-151-052-1; Sequence 1, Application US/09151052; Patent No. 6107070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME: Remillard, Jane
REGISTRATION NUMBER: 38,872
REFERENCE/DOCKET NUMBER: UFJ-ITELECOMMUNICATION INFORMATION:
TELEPHONE: (617) 227-7400
TELEPHONE: (617) 742-4914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: (617)742-4214
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 813 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CITY: Boston
STATE: Massachusetts
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MOLECULE TYPE: CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                43..708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              linear
                      ; LOCATION:
US-08-927-230A-1
  NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCATION:
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-151-052-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
```

Gaps

. 0

```
1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1367 ACTIVITALGITAACGGCCTCAACGCTGCCGAGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97 gécniacetrandentendades de la compandade de la compand
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        37 gecerréga a cerca careca e de construir d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 681;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 594;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.0%; Score 72.4; DB 3;
66.9%; Pred. No. 4.9e-12;
tive 0; Mismatches 51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1427 GAIGIGCTIACCCAGGITAAGCTICAGICTGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 darierracaecechéacaecrerreadecrecae 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.0%; Score 72.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2848-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATTORNEY/AGENT INFORMATION:
NAME: KOVATÍK, JOSEPÍ E.
REGISTRATION NUMBER: 33,005
REFERENCE/DOCKET NUMBER: 284
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (303) 863-9700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEFAX: (303) 863-0223
INFORMATION FOR SEQ ID NO: 6
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 681 base pairs
TYPE: nucleic acid
                                              LENGTH: 594 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 66.9<sup>3</sup>
Matches 103; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION DATA:
APPLICATION NUMBER: US
SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY: USA
ZIP: 80203
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: CDNA
                                                                                                                                                                            TOPOLOGY: linear
MOLECULE TYPE: CDNA
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1..681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        linear
                                                                                                                                                                                                                                                                                                                                                              1..594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CITY: Denver STATE: CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEPHONE:
                                                                                                                                                                                                                                                                                                                    NAME/KEY:
LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-075-019-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-075-019-6
                                                                                                                                                                                                                                                                                                                                                                                                            us-09-075-019-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1367 ACTIVATGITAACGGCCTCAACGCTGCCGAGGAGACTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            169 eccriacereaaceaecreaacereaceaedadadaararaceaedadeecerreeceaaedea 228
         235 GCCTACGTGAACAACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1, Application US/09075019
Sequence 1, Application US/09075019
Patent No. 6190658
GENERAL INFORMATION:
APPLICANT: UTC IR459
TITLE OF INVENTION: UPPROXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                     5240847-25
;Patent No. 5240847
; APPLICANT: HECKL, KONRAD;SPEVAK, WALTER;OSTERMANN, ELINBORG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2.0%; Score 74; DB 6; Length 1032; 67.5%; Pred. No. 2.4e-12; Live 0; Mismatches 50; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COPHEL, ANDREAS; KRYSTEK, EDELTRAUD; MAURER-FOGY, INGRID; WICHE-CASTANON, MARIA J.; STRATOWA, CHRISTIAN; HAUPTWANN, RUDOLF; TITLE OF INVENTION: HUMAN MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
OSFWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                      1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        229 gargitacagcccágaragcrcircagccigcac 262
                                                                                                                                                                                               295 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADDRESSEE: Sheridan Ross P.C.
STREET: 1700 Lincoln St., Suite 3500
CITY: Denver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATTORNEY AGENT INFORMATION:
NAME: KOVATIK, JOSEPH E.
REGISTATION NUMBER: 33,005
REFERENCE, DOCKET NUMBER: 2848-22
TELECOMMUNICATION INFORMATION:
TELEFAN: (303) 863-9700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 34
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/167,261
FILING DATE: 11-MAR-1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 67.5
Matches 104; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO:25:
LENGTH: 1032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        80203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ပ္ပ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CITY: Der
STATE: CC
COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-075-019-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5240847-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (HMN-SOD)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                               g
                                                                                                                    ò
```

```
1367 ACTIATGTIAACGGCCTCAACGCTGCCGAGGAGTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                 229 GCCTACGTGAACAACCTGAACGTCAACGAGAAGTACCAGGAGGAGGCCTTGGCCAAGGGA 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        human manganese superoxide dismutase EMBL #X59445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Webster, Keith A.
APPLICANT: Bishopric, Nanette H.
APPLICANT: Bishopric, Nanette H.
APPLICANT: Laderoute, Keith R.
APPLICANT: Green, Christopher J.
TITLE OF INVENTION: Tissue Specific Hypoxia Regulated
TITLE OF INVENTION: Therapeutic Constructs
NUMBER OF SEQUENCES: 37
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CUCUST.

ZIP: 94306
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/880,342
FILING DATE: 23-UTN-1997
CLASSIFICATION: 514
PRIOR APPLICATION NUMBER: PCT/IB95/00996
FILING DATE: 13-MOV-1995
PRIOR APPLICATION NUMBER: 98/365,486
FILING DATE: 23-DEC-1994
ATTORNEY/AGENT INFORMATION:
APPLICATION NUMBER: 38,615
REGISTRATION NUMBER: 38,615
REGISTRATION NUMBER: 38,615
REGISTRATION NUMBER: 324-0860
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 969 base pairs
TELECOMMUNICATION:
TELEPHONE: MONOBER: ACOSC
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 969 base pairs
TYPE: nucleic acid
TTPE: nucleic acid
TTPE: nucleic acid
TTPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 72.4; DB 3;
Pred. No. 7.2e-12;
0; Mismatches 51;
                                                                                                                                                                                                                                                            289 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEE: Dehlinger & Associates
: 350 Cambridge Avenue, Suite 250
Palo Alto
                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 27, Application US/08880342 Patent No. 6218179
                                                                                                                                                                                          1427 GAIGIGCITACCCAGGITAAGCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 2.0%;
Best Local Similarity 66.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE: CDNA to mRNA HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches 103; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ANTI-SENSE: NO
ORIGINAL SOURCE:
INDIVIDUAL ISOLATE:
INDIVIDUAL ISOLATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
APPLICANT: Webste
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                   US-08-880-342-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CITY: Pa
STATE: C.
COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-08-880-342-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET:
                                                                                                      qq
                                                                                                                                                                                      \stackrel{>}{\circ}
                                                                                                  1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                          1367 ACTIATGTTAACGGCCTCAACGCTGCCGAGGAGGTACTTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                           103 GĆCTACGTGAACCACCTGAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 162
                                               0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         169 éccérida a cercada respectada de la constante de la consta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               human manganese superoxide dismutase
EMBL #X59445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-08-365-486A-27

Sequence 27, Application US/08365486A

Patent No. 5834306

GENERAL INFORMATION:

APPLICANT: Webster, Keith A.

APPLICANT: Webster, Keith A.

TITLE OF INVENTION: Tissue Specific Hypoxia Regulated

TITLE OF INVENTION: Therapeutic Constructs

NUMBER OF SEQUENCES: 31

CORRESPONDENCE ADDRESS:

ADDRESSEE: Dehlinger & Associates

STREET: 350 Cambridge Avenue, Suite 250

CITY: Palo Alto
66.9%; Pred. No. 5.5e-12;
tive 0; Mismatches 51; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             51; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER TEDABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/365,486A
FILING DATE: 23-DEC-1994
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
MANDE. ACCURATE TOWNEY AGENT INFORMATION:
MANDE. CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                     1427 GAIGIGCTIACCCAGGITAAGCITCAGICTGIAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                      163 GATGTTACAGCCCAGACAGCTCTTCAGCCTGCAC 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 72.4; DB 2;
Pred. No. 7.2e-12;
0; Mismatches 51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER: 9255
TELECOMUNICATION INFORMATION:
TELEPHONE: (415) 324-0880
TELEFEX: (415) 324-0860
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
LENGTH: 969 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Sholtz, Charles K. REGISTRATION NUMBER: 38,615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE: CDNA to mRNA HYPOTHETICAL: NO ANTI-SENSE: NO ORIGINA' C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 2.0%;
Best Local Similarity 66.9%;
Matches 103; Conservative
Best Local Similarity 66.9
Matches 103; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGINAL SOURCE:
INDIVIDUAL ISOLATE:
INDIVIDUAL ISOLATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 94306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-365-486A-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY:
LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                        à
```

ö

```
USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                        CITY: Denver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY:
                                                                                                                                                                                                                            RESULT 12
US-09-075-019-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 706
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                셤
                                                                                         d
                                                       à
                                                                                                                              à
GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCACGAGCACCATCAG 1366
                                                                         1367 ACTIVIGITAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                     GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACACAAGCACCACGCG 228
                                                                                                             229 GCCTACGTGAACAACGTCAACGAGAGAAGTACCAGGAGGCGTTGGCCAAGGGA 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 976;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION: METHODS AND COMPOSITIONS RELATING TITLE OF INVENTION: TO NO-MEDIATED CYTOTOXICITY NUMBER OF SEQUENCES: 20 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/09/126,109 FILING DATE: 30-UUL-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.0%; Score 72.4; DB 3; ilarity 66.9%; Pred. No. 7.2e-12; Conservative 0; Mismatches 51;
                                                                                                                                                      1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                            289 GATGTTACAGCCCAGATAGCTCTTCAGCCTGCAC 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/055,092
FILING DATE: 30-JUL-1997
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US UNKNOWN
FILING DATE: 03-MAR-1998
ATTORNEY/AGENT INFORMATION:
NAME: MCMIllian, Nabeela R.
REGISTRATION NUMBER: P-43,363
REGISTRATION NUMBER: P-43,363
REFERENCE/DOCKET NUMBER: UTSD:560
TELECOMMUNICATION INFORMATION:
TELEPHONE: (512) 418-3000
TELEPHONE: (512) 418-3000
TELEPHONE: (512) 474-7577
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               E: Arnold, White & Durkee P.O. Box 4433
                                                                                                                                                                                                                                                                                                                                                 Thigpen, Anice
Hohmeier, Hans-Ewald
Newgard, Christopher B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rhodes, Christopher J.
Hugl, Sigrun R.
Cousin, Sharon
                                                                                                                                                                                                                                                                                 Sequence 1, Application US/09126109
Patent No. 6171856
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                      Unger, Roger H.
Shimabukuro, Michio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 976 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                            Chen, Guaxun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
Matches 103; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE: 3(CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADDRESSEE: Arno
STREET: P.O. Bo
CITY: Houston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Техав
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: Hou
STATE: Te
COUNTRY:
                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-126-109-1
                                           169
                                                                                                                   d
                                                                                                                                                            ð
                                                                                 ò
                                         d
```

1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366

ઠે

Gaps ; 0

Indels

```
1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1367 ACTIATGITAACGGCCTCAACGCIGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1367 ACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          646 gecriacitgaactraaketraeedeksaksaksiaetaeessaksetrisseekaksaa 705
263 eccriacerdalcaectrealcercecedadelanagraceadagecerregedades 322
                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:

GENERAL INFORMATION:

APPLICANT: UTC IR459

TITLE OF INVENTION: A GENETICALLY MODIFIED MANGANESE

TITLE OF INVENTION: SUPEROXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE
NUMBER OF SEQUENCES: 12

CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 3; Length 3789;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     51; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1427 GAIGIGCITACCCAGGITAAGCIICAGICIGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            daigitacagcccádacagcrctircagccidcac 739
                                                                                                                                                                           1427 GAIGIGCTIACCCAGGITAAGCTICAGICTGTAC 1460
                                                                                                                                                                                                                         323 GATGTTACAGCCCAGACAGCTCTTCAGCCTGCAC 356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 72.4; DB 3
Pred. No. 2e-11;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E: Sheridan Ross P.C.
1700 Lincoln St., Suite 3500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION:
ATTORNEY/AGRATION:
NAME: KOVATIK, JOSEPIN E.
REGISTRATION NUMBER: 33,005
REPERENCE/DOCKET WINDRER: 2848-22
TELECOMMUNICATION INFORMATION:
TELECPHONE: (303) 863-9700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ZIP: 80203
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 13
US-08-928-692-29
; Sequence 29, Application US/08928692
                                                                                                                                                                                                                                                                                                                                                  Sequence 8, Application US/09075019 Patent No. 6190658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (303) 863-0223
INFORMATION FOR SEQ ID NO: 8
SEQUENCE CHARACTERISTICS:
LENGTH: 3789 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 2.0
Best Local Similarity 66.9
Matches 103; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: CDNA US-09-075-019-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             linear
```

```
1341 CCCTICACCACCACCAAGCACCATCAGACTTAACGGCCTCAACGCTGCCGAGGAGA 1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       852 TridactidaAraacagargacratiggcecictricaeccictricticcegaaagarcaide 911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Brown, Robert
APPLICANT: Brown, Robert
APPLICANT: Brown, Baniel R.
TITLE OF INVENTION: COMPOUNDS AND METHODS FOR THE DIAGNOSIS,
TITLE OF INVENTION: TREATMENT AND PREVENTION OF DISEASES OF CELL DEATH
NUMBER OF SEQUENCES: 45
CORRESPONDENCE ADDRESS:
ADDRESSEE: Clark & Elbing LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1281 TIGGITGAAATTCCTCTCCACTCAGGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           912 AGCTTCACCACAAGAACCACCACCAGACCTATGTCAACAGCTACAACACCGCCATCGAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1401 GCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCCAGGTTAAGCTTCAGTC 1455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      972 AGCTCCAGGAGGCGTCGCCAAGGAGGACATCACCACTCAGATCAACCTCAAGCC 1026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2.0%; Score 71; DB 4; Length 3300; 62.9%; Pred. No. 5e-11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ZIP: 02109-1024
COMPUTER READABLE FORM:
MEDIUM TYBE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION NDATA:
APPLICATION NUMBER: US/08/023,980B
FILING DATE: 26-FEB-1993
                                                                                                                            SOFTWARE: FASTEM: DOS CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/330 ~~~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches
                                                                                                                                                                                                                                                                        CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/928,692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 2, Application US/08023980B Patent No. 5843641
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E: Clark & Elbing LLP
585 Commercial Street
                                                                                                                                                                                                                                                                                                                                                                                           NAME: Lambiris, Elias J
REGISTRATION NUMBER: 33,728
REFERENCE/DOCKET NUMBER: 494
TELECOMMUNICATION INFORMATION:
TELEPHONE: 212-867-0123
                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette
COMPUTER: IBM Compatible
                                                                                                                                                                                                                                                                                                                                                FILING DATE:
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGIH: 3300 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: 212-878-9655
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 110; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   nucleic acid
EDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Abbar
STREET: 500
"TW: Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: nucleic strandedors:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 USA
                                                                                                                                                                                                                                               FILING DATE:
                                                  10174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-339-972-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-08-023-980B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1281 TIGGTIGAAAATICCICICCACICAGGCCCIGGAGCCCTCCATCTCCAAGGAGATCAIGA 1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1341 CCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGA 1400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                912 AGCTTCACCACAAGAACCACCACCAGACCTATGTCAACAGCTACAACAACACCGCCATCGAAC 971
                                                                                                                                                                                                                                     3: No. 59587270 No. 5958727disk of No. 5958727th America, Inc. 405 Lexington Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES: 80
CORRESPONDENCE ADDRESS:
ADDRESSEE: No. 63230020 No. 6323002disk of No. 6323002th America, Inc.
STREET: 405 Lexington Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               852 Trgacrdaaracagargacrarggcecccrrraagcecrcrrarcregaaagarcarge
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1401 GCTACTCGGCCGCTGTGGCCAAGGATGTGCTTACCCAGGTTAAGCTTCAGTC 1455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              972 AGCTCCAGGAGGCGTCGCCAAGGAGGACATCACCACTCAGATCAACCTCAAGCC 1026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .;
0
                                                                                    APPLICANT: Lamsa, Michael
APPLICANT: Hansen, Kim
TITLE OF INVENTION: Methods for Modifying the Production of
TITLE OF INVENTION: a Polypeptide
NUMBER OF SEQUENCES: 80
CORRESPONDENCE NO FORENTY AND FORENTY OF NO. 5958727th
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Brody, Howard
APPLICANT: Iames, Michael
APPLICANT: Hansen, Kim
TITLE OF INVENTION: Methods for Modifying the Production of
TITLE OF INVENTION: a Polypeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 2; Length 3300;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 2.0%; Score 71; DB 2; Length 330 Best Local Similarity 62.9%; Pred. No. 5e-11; Matches 110; Conservative 0; Mismatches 65; Indels
                                                                                                                                                                                                                                                                                                                                                                                                               SURTWARE: FASTER: DOS SULTWARE: FASTERO FOR Windows Version 2.0 CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/928,692
FILING DATE: 12-SEPT-1997
CLASSIFICATION: 435
ATTORNEY/AGENT TOTAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME: Lambiris, Elias J
REGISTRATION NUMBER: 33,728
REFERENCE/DOCKET NUMBER: 4944.200-US
TELECOMMUNICATION INFORMATION:
TELEPHONE: 212-867-0123
TELEPFAX: 212-878-9655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 29, Application US/09339972 Patent No. 6323002
                                                                       Yaver, Deborah S.
Lamsa, Michael
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION FOR SEQ ID NO: 29:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 3300 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM: MEDIUM TYPE: Diskett
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              linear
                                                Brody,
                                                                                                                                                                                                                                                                   *US LEX
CITY: New York
STATE: NV
                         GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CITY: New York
                                                                                                                                                                                                                                                                                                                                     USA
Patent No. 5958727
                                                                                                                                                                                                                                                                                                                                                                 10174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 14
US-09-339-972-29
                                                                                                                                                                                                                                                                                                                                        COUNTRY:
                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
```

```
..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1367 ACTIATGITAACGGCCTCAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAG 1426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1307 GCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAG 1366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     204 GCCCTGGAACCTCACATCAACGCGCAGATCATGCAGCTGCACCACCACAAGCACCCACGCG 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  264 GCCTACGTGAACAACCTGAACGTCACCGAGGAAGTACCAGGAGGCGTTGGCAAAGGGA 323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match

1.9%; Score 70.8; DB 2; Length 977;

Best Local Similarity 66.2%; Pred. No. 2.3e-11;

Matches 102; Conservative 0; Mismatches 52; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1427 GATGTGCTTACCCAGGTTAAGCTTCAGTCTGTAC 1460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          324 GATGTTACAGCCCAGACAGCTCTTCAGCCTGCAC 357
CLASSIFICATION: 435
ATTORNEY/AGENT INPORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/POCKET NUMBER: 00786/177001
TELEPHONE: 617/23-4123
TELEPHONE: 617/23-4123
TELEPK: 617/723-4123
TELEPK: 617/723-4123
TELEPK: 617/723-8962
TELER:
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 977 base pairs
TYPE: nucleic acid
TYPE: nucleic acid
TYPE: nucleic acid
TOPOLOGY: linear

MOLECULE TYPE: DNA
US-08-023-980B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Search completed: April 1, 2004, 13:45:30 Job time: 266.87 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
```

```
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
```

sw model
š
using
search,
nucleic s
1
nucleic .
õ

April 1, 2004, 10:57:14 ; Search time 47.1302 Seconds Run on:

(without alignments) 7877.372 Million cell updates/sec

US-09-727-855B-4 669

Title: Perfect score:

Sequence:

1 atgicigiticgagcatecet......gatigcaggetgetetetaa 669

IDENTITY NUC Gapop 10.0 , Gapext 1.0 Scoring table:

682709 segs, 277475446 residues Searched:

Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database

Issued_Patents_NA:*
1: /cgn2_6/ptodata/2/ina/5A_COMB.seq:*
2: /cgn2_6/ptodata/2/ina/5B_COMB.seq:*
3: /cgn2_6/ptodata/2/ina/6A_COMB.seq:*
4: /cgn2_6/ptodata/2/ina/6B_COMB.seq:*
5: /cgn2_6/ptodata/2/ina/pcTUS_COMB.seq:*
5: /cgn2_6/ptodata/2/ina/seq:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

	Description	Segmence 5. Appli	, -	. 0		equence 1.			Segmence	27		ا د	Segmence 2 Appli	iα	· -	ìv	, L	2 2			atent No.	atent No.	Ž	atent No.	Semience	o de le le	equence 23,	equence 25,
SUMMARIES	ULU TILLE TERRET	US-09-091-097-5	-760-160	US-09-091-097-29	327-230	Ö	õ	5240847-25	~	34	ö	08-023-980	-08-486	-09-075-019-8	-075-019-	0	47-16	5240847-9	5240847-17	5240847-19	240847	240847	5240847-1	5240847-5	-08-928-692-2	-972-2	-09-214-909-2	ή.
9	H I	4	4	ጥ	N	m	4	9	N	۳	m	~	~	٣	m	m	9	9	ø	9	9	9	ڡ	ø	~	4	4	4,
	rengra	728	812	630	813	813	829	1032	696	696	916	217	977	3789	594	681	009	600	009	987	009	535	623	522	3300	3300	621	371
% Query	MALCII	37.7	37.5	33.0	29.8		29.8	29.6	29.3	29.3	29.3	29.1	29.1	29.1	29.0	29.0	27.6	27.3			27.1				23.3			
0 0 0	5		50	20	9	99	199.4	97	96	g.	96	94	94	σ	194	~	184.4	182.8	\sim	182.8	-	10	ī	^	10	in	154	142
Result		1	7	m	4	S	9	7	c o	σı .	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

NAME/KEY: CDS LOCATION: 1..618

Sequence 2, Appli Sequence 1, Appli Sequence 1, Appli Sequence 44, Appli Sequence 44, Appli Sequence 4999, Ap Sequence 40, Appl Sequence 8022, Ap Sequence 8124, Appl Sequence 37, Appl Sequence 38, Appl	Sequence 33, Appl
US-09-103-840A-2 US-09-103-840A-1 US-09-1373-731-1 US-09-198-45.2A-1 US-09-489-039A-4999 US-09-489-039A-4999 US-09-252-991A-8022 US-09-252-991A-8022 US-09-252-991A-8294 US-08-133-711-34	US-08-133-711-33
м стффсффстафст	I el .
20.8 4403765 20.8 4411529 20.1 1230023 20.1 1230023 18.5 491 17.9 654 17.9 999 17.5 491 17.1 491 16.7 491 16.7 491 16.7 491 16.7 491 16.7 491	491
20000000000000000000000000000000000000	16.5
139.2 139.2 134.6 123.8 121.8 121.6 121.6 119.6 119.6 115.8 114.2 114.2	110.4
222666666666644444 80001264596786001264	45
υυ	

ALIGNMENTS

```
APPLICANT: VARGHERA, TOMOKO
APPLICANT: KURODA, MASANOBU
APPLICANT: NISHI, YOSHIMI
APPLICANT: NISHI, YOSHIMI
APPLICANT: AKIYAMA, KAZUO
APPLICANT: YASUBA, HIROSHI
APPLICANT: YASUBA, HIROSHI
APPLICANT: YAMGUCHI, HIDEYO
TITLE OF INVENTION: MAIASSEZIA
NUMBER OF SEQUENCES: 5
CORRESPONDENCES: 5
CORRESPONDENCES: ADDRESS: ADDRESS: ADDRESSEE BIRCH, SIEWART, KOLASCH & BIRCH, LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ZIP: 22040-0747
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IE PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/091,097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER: 32,181
REFERENCE/DOCKET NUMBER: 1422-0346P
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-205-8000
TELEPAX: 703-205-8050
TELEPAX: 703-205-8050
TELEPAX: 703-205-8050
SEQUENCE CHARACTERISTICS:
LENGTH: 728 base nairs
                 Sequence 5, Application US/09091097
Patent No. 6432407
                                                                                    TAKESAKO, KAZUTOH
                                                                                                      OKADO, TAKASHI
YAGIHARA, TOMOKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TOPOLOGY: linear
MOLECULE TYPE: CDNA to mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: WEINER, MARC S.
REGISTRATION NUMBER: 32,1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 728 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                          FALLS CHURCH
                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                       USA
                                                                                                                                                                                                                                                                                                                                                                                                                                   ΚX
                                                                              APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                          CITY: FAI
STATE: VA
COUNTRY:
US-09-091-097-5
```

```
FILING DATE
                                                                                                                                                                                                                                                    TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 3
US-09-091-097-29
                                                                                                                                                                                                                                                                                                    ;
LOCATION:
US-09-091-097-7
                                                                                                                                                                                                                                                                                         NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       612
                                                                                                                                                                                                                                                                                                                                                                                                                            72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠ્ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                 ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTGACATCTGGGAGGAGGCTTTCTACCTTCAGTACAAGAACGTCAAGCTGACTATCTCG 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      485 ggganggchgdgadgchggchgchgchgchgahgahgahgaggchrgchra 544
                                                                                                                                                                                                                                                                                           367
                                                                                                                                                                                                                                                                                                                                              AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA 427
                                                                                                                                                                                                                                                                                                                                                                        308 AGGCCATCGAGCAGGAGTTCGGCGACTTTGAGAGTTCAAGACGACCTTCAACACGAAGG 367
                                                                                                                                                                                                                                                                                                                                                                                                                               424
                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGAAGTCACCACGACCGCCAAGCACCCTCTGCTTACTCACATTCCTATCATCGGAG 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rcaaccresrcareccaagaaccaggacccaccaccaccaccaccaccarcarrager 484
                                                                                                                                              TCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGG 247
                                                                                                                                                                                                          rchacececeachadeceracecraedecacececaaceacerecraaceas
                                                                                                                                                                                                                                         307
                                                                                                                                                                                                                                                                 247
                                                                                                                                                                                                                                                                                                                  248 dealadalacrideccececedandenadendendenenarenenedarenenerierenen 307
                                                                                                                                                                                                                                                                                                                                                                                                    CCGCTGCTGTCCCAAGGATCCGGATGGGGCTGGCTTGGAACCCGCTTACTAAGAAGC 487
                                                                          TCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCA 127
                                                                                                                               TCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCC 187
                                                                                                    67
                                                                                             rccadcrecadadrecearcaactreacdececadecadadadacacrececretrer
                                                                                                                                                                                                                                                                                           GGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                             ceecceecarccaeeerrceeecrereicerciceererrececce
                                                 Gaps
                                                 ٠<u>.</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    608 CIGCIGITIGGICCGITAICAACIACAAGGAGGCAGAGGCCCGAIIGC 655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            s45 agécergerideaacérgergaachgagecegagecegagaagegerree 592
                     DB 4; Length 728
                      Score 252; DB 4; Length 72
Pred. No. 5e-68;
0; Mismatches 200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   \Gamma_{LP}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YAMAGUCHI, HIDEYO
VENTION: ANTIGENIC PROTEIN ORGINATING
VENTION: MALASSEZIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: BIRCH, STEWART, KOLASCH & BIRCH,
STREET: PO BOX 747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 7, Application US/09091097
Patent No. 6432407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KURODA, MASANOBU
ONISHI, YOSHIMI
KATO, IKUNOSHIN
AKIYAMA, KAZUO
YASUEDA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TAKESAKO, KAZUTOH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OKADO, TAKASHI
YAGIHARA, TOMOKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ZIP: 22040-0747
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                         37.7%;
65.5%;
                         Query Match 37.7
Best Local Similarity 65.5
Matches 385; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CITY: FALLS CHURCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEOUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
APPLICANT: TAKESA
APPLICANT: OKADO,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STATE: VI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 2
US-09-091-097-7
JS-09-091-097-5
                                                                                                                                                                                                                                          248
                                                                                                                                                                                                                                                                                                                                                    368
                                                                                                                                                                                                                                                                                                                                                                                                                                    368
                                                                                                                                                                                                                                                                                                                                                                                                                                                               488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    548
                                                                                                                                                                                                                                                                                                                                                                                                          428
                                                                                                                                                                                                                  128
                                                                                                                                                                                                                                                                      1.88
                                                                                                                                                                                                                                                                                                308
                                                                               89
                                                                                                                                                              9
                                                                                                                                                                                       88
                                                                                                                                                                                                                                                                                                                                                                            pp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                        g
                                                                                                                                                                                                                 염
                                                                                                        셤
                                                                                                                                    8
                                                                                                                                                                                       \delta
```

```
rengggageacgerrichactreagracaacgreaageersacrareregergerg 613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       374 TCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGTTCAACGTGACACGCTGACGCTG 433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         434 CIGICCAAGGAICCGGAIGGGCIGGCIIGGCIIGAACCCGCIIACIAAGAAGCIGGAAG 493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACTTCCTATCATCGGAGTTGACA 553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  492 TCATCACGACGCGAACCAGGACCCGCTCTGTCGCACAAGCCGCTGATTGGCATCGATG 551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ccaadracacecteccectecceracearaceacececececeaececececece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          134 AGGAGATCATGACCCTTCACCACACACCACCATCAGACTTATGTTAACGGCCTCAACG 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  132 eccisionicarida a de contractor de caracida de contracidado de contracidade de contracidad
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAAGC 253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cededaddakeaagergaredaddegerreegedaddageecederegedadarreed 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    252 AGCTGAACGCGATCAAGTTCAACGGCGGTGGCCACATCAACCACTCGCTTTCTGGAAGA 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              314 ACTIGGCTCCCTAIGGATCCGAGGAGGCTACCCTCTCGAAGGACCTCTCAAGAAGGCTA 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Accircécedes and a des des de contra de la contra de la contra de la 1910 de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        74 CAAAGCATACCCTGCCTGAGCTTCCTTACGATGCCCTGGAGCCCTCCATCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITGGICCGITATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCTGGACCGTGATCAACTTTGAGGAGGCCGAGAAGCGTCTCAAGGAGGCGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 812;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/091,097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 250.6; DB 4;
Pred. No. 1.4e-67;
0; Mismatches 214;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1422-0346P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: WEINER, MARC S.
REGISTRATION NUMBER: 32,181
REFERENCE/DOCKET NUMBER: 1422
TELECOMMUNICATION INFORMATION:
TELECHONE: 703-205-8000
TELEPHONE: 703-205-8050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                37.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE: CDNA to mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS: LENGTH: 812 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 63.9
Matches 379; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2..673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
```

. 0

```
361 ACGCAGAAGCTCGACATCACGACCGCGAACCAGGACCCGCTCCTGTCGCACAAGCCG 420
                                                                                                                                                  121 CTGATTGGCATCGATGCGTGGGGGCGCGTACTACCTGCAGTACAAGAACGTCAAGGCC 480
                                                                                                                                                                                                                                              481 GACTACTICAAGGCGATCTGGACCGTGATCAACTTTGAGGAGGCCGAGAAGCGTCTCANG 540
                                                                                                                                                                                                         598 GACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAG 657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT 128
                                              478 ACTAAGAAGCTGGAAGTCACCACGACGCCAACCAGGACCCTCTGCTTACTCACATTCCT
                                                                                                                           538 ATCATCGGAGTIGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCT
                                                                                                                                                                                                                                                                                                                                                                                                   ### Sequence 1, Application US/08927230A

| Sequence 1, Application US/08927230A
| Patent No. 5895633
| Patent No. 5895633
| APPLICANT: Nick et al.
| TITLE OF INVENTION:
| NUMBER OF SEQUENCES: 11
| CORRESPONDENCE ADDRESS: 1
| ADDRESSEE: LAHIVE & COCKFIELD, LLP
| STREET: 28 State Street, Floor 24
| CITY: Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 2; Length 813;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/927.270A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 199.4; DB 2;
Pred. No. 9.2e-52;
0; Mismatches 216;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                38,872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION: TELEPHONE: (617) 227-7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX: (617)742-4211
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 813 base pairs
; TYPE: nucleic acid
'"""ANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29.8%;
ilarity 61.1%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATTORNEY/AGENT INFORMATION:
NAME: Remillard, Jane
REGISTRATION NUMBER: 38,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE:
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                      658 GCTGCTCTC 666
                                                                                                                                                                                                                                                                                                                            541 GAGGCGCTC 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOLECULE TYPE: CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
Matches 367; Conserva
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: USA
ZIP: 02109-1875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY:
LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; NAME/KEY:
; LOCATION:
US-08-927-230A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                            셤
                                                                               дD
                                                                                                                           ð
                                                                                                                                                             d
                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                      à
                                         \overset{\circ}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  118 GAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTAT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GITAACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTG 237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 CTCGGCGAGATTGCGCAGCTGAACGCGATCAANTTCATCGGCGGTGGCCACATCAACCAC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGA 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241 GAGCTGCGCTCCGCGATCGACCGCGACTTTGGCTCGGTCGACGCCATGAAGGAGAAGTTC 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 GAACCTGCTTTCTGGGGGGGGGATAATGGAGACGCACTACGAGAAGCACCACCGCACCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          358 CCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                   APPLICANT: YAMAGUCHI, HIDEYO
TITLE OF INVENTION: ANTIGENIC PROTEIN ORGINATING IN
TITLE OF INVENTION: MALASSEZIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER: US/09/091,097
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 33.0%; Score 220.6; DB 4; Best Local Similarity 62.5%; Pred. No. 2.3e-58; Matches 343; Conservative 0; Mismatches 206;
                                                                                                                                                                                                                                                                                                                   SEE: BIRCH, STEWART, KOLASCH & BIRCH,
: PO BOX 747
FALLS CHURCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1422-0346P
Sequence 29, Application US/09091097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REGISTRATION NUMBER: 32,181
REFERENCE/DOCKET NUMBER: 14
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-205-8000
                                                                         OKADO, TAKASHI
YAGIHARA, TOMOKO
KURODA, MASANOBU
ONISHI, YOSHIMI
KATO, IKUNOSHIN
                                                      TAKESAKO, KAZUTOE
                                                                                                                                                                             AKIYAMA, KAZUO
YASUEDA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOLECULE TYPE: CDNA to mRNA US-09-091-097-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: WEINER, MARC S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEFAX: 703-205-8050
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 630 base pairs
                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES: 58
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY: USA
ZIP: 22040-0747
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                   APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                           APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             298
```

ð С d 8 g ò g ò

```
Query Match
Best Local Similarity 61.1
Matches 367; Conservative
                                                                                                                                                                                                                    mat_peptide
 REGISTRATION NUMBER:
                                                                                                                                                                                          43..708
                                                                                                                                       linear
                                                                                                                                                  MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    669
                                                                                                                                                                             NAME/KEY:
LOCATION:
                                                                                                                                                                                                                 NAME/KEY:
;
;
;
;
US-09-151-052-1
                                                                                                                                       TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          099
                                                                                                                                                                                                                                                                                                                                                                                 129
                                                                                                                                                                                                                                                                                                                                                                                                           168
                                                                                                                                                                                                                                                                                                                                                                                                                                      189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              489
                                                                                                                                                                                                                                                                                                                             69
                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                 \overset{\circ}{\circ}
                                                                                                                                                                                                                                                                                                                                            518
                                                                                                                                                                                                                                                                                                                                                                                                578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         698
                                                                                                                                                                                                         368
                                                                                                                                                                                                                                    398
                                                                                                                                                                                                                                                               428
                                                                                                                                                                                                                                                                                       458
                                                                                                                                                                                                                                                                                                                 488
                                                                                                                          287
                                                                                                                                                                                347
caacececadarcarecaecrecáceacadedadedecaceacegeceracerdaacaacer
                                                                                               CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                          GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                     249 TAAGCTICAGICTGCICTCAAGITCAACGGAGGAGGACACAICAAICACICTGTICTG
                                                                                                                                                                              GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                  348 gacadacricagceeradegragaagadaacea-----adgagagarigerga
                                                                                                                                                                                                                                                               GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                       399 AGCCATCAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGCTGCATC
                                                                                                                                                                                                                                                                                                                 TGTTGGTGTCCAAGGCTCAGGTTGGGTTGGCTTTGGTTTCAATAAGCAACGGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                     GGAAGTCACCACGACCAACCAGGACCCTCTGC-----TTACTCACTTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                acaaattgctrgctrgtccaaatcaggarccactgcaaggaagaagaggcctrattccact
                                                                                                                                                                                                                                                                                                                                                                                                                           CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                    geregegarreargregeageacecrrracracerreagraraaaargreagecerea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         639 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                           CTCCAAGGAGATCATGACCCTTCACCACACCAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Superoxide Dismutase Mutants
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: Floppy disk
COMPUTER: IM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/151,052
FILING DATE:
CLASSIFICATION:
PRICASSIFICATION:
PRICASIFICATION DATA:
APPLICATION NUMBER: 08/927,230
FILING DATE: September 10, 1997
ATTORNEY, AGENT INFORMATION:
NAME: Remillard, Jane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Nick et al.
TITLE OF INVENTION: Human Manganese
NUMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS: ADDRESSEE: LAHIVE & COCKFIELD
STREET: 28 State Street, Floor 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1, Application US/09151052
Patent No. 6107070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CITY: Boston
STATE: Massacl
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               - ⊟
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-151-052-1
                                                                                                                                                                                                                                                                                                                                             459
                                                                                                                                                                                                                                                                                                                                                                        489
                                                                                                                                                                                                                                                                                                                                                                                                                            540
                                                                                                                                                                                                                                                                                                                                                                                                                                                       579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      999
                                                                                                    189
                                             129
                                                                         168
                                                                                                                             228
                                                                                                                                                                                                                                                                369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 5
                                                                                                                                                                                                                                                                                                                                         Dp
                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                              g
                                                                                                                                                                                                         8
                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                       \stackrel{>}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                     셤
                                                                                                  ò
                                                                                                                    a
                                                                                                                                               ò
                                           ⋩
```

```
GAAGAACTIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       399 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC 458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC------TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                579 GCTGGGGATTGATGTGGGAGCACGCTTACTACTTCTCTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      639 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gaacercacceaedadaaeraccaedaeecerreeccaaedeaearerracaeccaedar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    519 ACAAAİTGCTGCTTGTCCAAATCAGGATCCACİĞCAAGGAACAACAGGCCTTAİTİCCACİ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                108 cadderadaddacaddcereceddaceraceracaeradddecedeeradaadceredar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       459 rerrigererecaageereagerreggerregerriggrificaaraagaaceggacacrr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTCCAAGGAGATCATGACCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <u> caacigceledátcatecagetrecacededageadecaceacededetracetreadeaect</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 813;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 199.4; DB 3;
Pred. No. 9.2e-52;
0; Mismatches 216;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 6
US-09-023-655-1348
; Sequence 1348, Application US/09023655
; Patent No. 6607879
38,872
R: UFJ-001
               REFERENCE/DOCKET UNDRER:
TELECOMMUNICATION INFORMATION:
TELETAN: (617)227-7400
TELETAX: (617)742-4214
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 813 base pairs
TYPE: nucleic acid
STRANDENESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             29.8%;
```

578 599

539

629 698

638

7

```
CGCTGCTGTCCAAGGATCCGGATGGGGCTTGGCTTGAACCCCGCTTAACTAAGAAGCT 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66 CAGGCAGAAGCACCTCCCCGACCTGCCTACGACTACGGCGCCCTGGAACCTCACAT 125
                                                                                                                                                                                                                                                                                                        663 TTATCTARARGCTATTTGGARTGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGTTGGTGTCCAAGGCTCAGGTTGGGTTGGCTTGGTTTCAATAAGGAACGGGGACACTT 476
                                                                                                                                                                                                                       603 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA
                                               483 Térrideréréchadécricaderrederrederriderricaaraacaacagacarr
                                                                                            -- TTACTCACATTCCTAT
                                                                                                                                  543 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                             540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    126 CAACGCGCAGATCATGCAGCTGCACCACAGCAGCACCACGCGCGCTACGTGAACAACCT
                                                                                                                                                                                                                                                                600 CTATCTCGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                186 GAACGICACCGAGGAGAAGTACCAGGAGGGGTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GACAAACCTCAGCCCTAACGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              357 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           477 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1032;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ELINBORG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; PARCHI NO. 5240847
; PAPLICANT: HECKL, KONRAD; SPEVAK, WALTER; OSTERWANN, ELINBORG; ZOPHEL, ANDREAS; KRYSTEK, EDELTRAUD; MAURER-FOOY, INCELD; MICHE-CASTANON, MARIA J.; STRATOWA, CHALSTIAN; HAUFTWANN, RUDOLF; TITLE OF INVENTION: HUMAN MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 197.8; DB 6;
Pred. No. 3.2e-51;
0; Mismatches 217;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGAAGTCACCACGACGCCAACCAGGACCCTCTGC---
                                                                                         GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES: 34
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/167,261
FILING DATE: 11-MAR-1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity 60.9
Matches 366; Conservative
                                                                                                                                                                                                                                                                                                                                                     660 T 660
                                                                                                                                                                                                                                                                                                                                                                                           723 T 723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;SEQ ID NO:25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 7
5240847-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5240847-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (HMN-SOD)
                                                                                                                                                                                                              g
                                                                                       à
                                                                                                                             d
                                                                                                                                                                        à
                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAGAACTIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cadecagaadcicciccaacciecciacaciacaciacaciacaccicciacaacciccacai
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAACGTCACCGAGGAGGAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  423 AGCCATCAÁACGTGACTTTGGTTCCTTTGACAAGTTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAACGCGCAGATCATGCAGCTGCACCACAGCAACCACCACGCGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAACGCTGCCGAGGAGACTACTCGGCCGCTGTGGGCAAGGAGGAGGATGTGCTTACCCCAGGT
                                                                                     FOR THE DETECTION OF BLOOD CELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                       Word Perfect 6.1 for Windows/MS-DOS 6.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 199.4; DB 4;
Pred. No. 9.2e-52;
0; Mismatches 216;
               APPLICANT: Cocks, Benjamin G.
APPLICANT: Susan G. Stuart
APPLICANT: Jeffrey J. Seilhamer
TITLE OF INVENTION: COMPOSITION FOR THE DET
TITLE OF INVENTION: EXPRESSION
NUMBER OF SEQUENCES: 1508
CORRESPONDENCE ADDRESS:
ADDRESSEE: INCYTE PHARMACEUTICALS, INC.
STREET: 3174 PORTER DRIVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICALLO.
FILING DATE:
CLASSIFICATION:
ATTORNEY AGENT INPORMATION:
NAME: Zeller, Karen J.
REGISTRATION NUMBER: 37,071
REFERENCE/DOCKET NUMBER: PA-0001 US
TELECOMMUNICATION INPORMATION:
TELECOMMUNICATION INPORMATION:
TELECOMMUNICATION INPORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/023,655
FILING DATE: HEREWITH
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                        MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEPHONE: (650) 855-0555
TELEFAX: (650) 845-4166
INPORMATION FOR SEQ ID NO: 13-
SEQUENCE CHARACTERISTICS:
LENGTH: 829 base pairs
TYPE: nucleic acid
STRANDEDNESS; single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 61.1%;
Matches 367; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                         ZIP: 94304
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                            CITY: PALO ALTO
STATE: CALIFORNIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENBANK
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IMMEDIATE SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; CLONE: 934710
US-09-023-655-1348
                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LIBRARY:
                                                                                                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         369
```

g

à

8 Db à qq

428

488

536 539 596

```
309 GAAGAACTIGGCICCCTAIGGAICCGAGGAGGCIACCCICTCTGAAGGACCICTCAAGAA 368
                                                                                                                                                                                                                                                   -----AAGGGAGTTGCTGGA 416
                                                                                                                                                                                                                                                                                                                                 417 Addeahdahacangaciringgiriceringakangrinahagahahadahadergang 476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CIAICICGCIGCIGITITGGICCGITAICAACIACAAGGAGGCAGAGGCCCGAITGCAGGC 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                657 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 716
                                                                                                                                                             537 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CATCGGAGITGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
186 CAACGCGCAGATCATGCAGCTGCACCACCAGCACCACGCGCGCCTACGTGAACAACCT
                                                                                 246 GAACGTCAACGAGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                             369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                            429 CGCTGCTGTCCAAGGATCCGGATGGGGTTGGCTTGGAACCCGCTTACTAAGAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                   477 retriegretecaageereagerreggerregerregriticaaraagaacgggacaerr
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   597 gergggggarrgargrgrggggggggcgcgrracracracrrcagraraaaargrcaggccrga
                                           CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
APPLICANT: Webster, Keith A.
APPLICANT: Bishopric, Nanette H.
APPLICANT: Bishopric, Nanette H.
APPLICANT: Murphy, Brinn
APPLICANT: Laderoute, Keith R.
APPLICANT: Green, Christopher J.
APPLICANT: Trissue Specific Hypoxia Regulated
TITLE OF INVENTION: Therapeutic Constructs
NUMBER OF SEQUENCES: 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                              489 GGAAGTCACCACGACCCAACCAGGACCCTCTGC---
                                                                                                                                                                                                                                                     366 gacadacticagcicinaacigiigagagaaccia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE: Dehlinger & Associates
STREET: 350 Cambridge Avenue, Suite 250
CITY: Palo Alto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/IB95/00996
FILING DATE: 13-NOV-1995
PRIOR APPLICATION NUMBER: US 08/365,486
APPLICATION NUMBER: US 08/365,486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPFRATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN RElease #1.0,
APPLICATION DATA:
APPLICATION NUMBER: US/08/880,342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 27, Application US/08880342 Patent No. 6218179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T 717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     94306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-880-342-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           717
                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                      셤
                                                                                                                                                                      g
                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                ò
                                               ò
                                                                                                                                   ð
                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            188
                                               537 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA 596
                                                                                          CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC 659
                                                                                                                               597 TTATICTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 656
          CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA 599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   126 cadecagadecacaecerecedacereceracearacaecerececeredaacerecan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              human manganese superoxide dismutase EMBL #X59445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                         Sequence 27, Application US/08365486A
Sequence No. 584306
GENERAL INFORMATION:
APPLICANT: Webster, Keith A.
APPLICANT: Bishopric, Namette H.
TITLE OF INVENTION: Therapeutic Constructs
NUMBER OF SEQUENCES: 31
CORRESPONDENCE ADDRESS:
ADDRESSEE: Deblinger & Associates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/365,486A
FILING DATE: 23-DEC-1994
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: Sholtz, Charles K.
REGISTRATION NUMBER: 38,615
REGISTRATION NUMBER: 38,615
REPRENCE/DOCKET NUMBER: 38,615
RELEPHONE: (415) 324-0860
TELEPHONE: (415) 324-0960
INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 196.2; DB 2;
Pred. No. 9.7e-51;
0; Mismatches 218;

    Dehlinger & Associates
    Cambridge Avenue, Suite 250

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM FC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tch 29.3%;
al Similarity 60.7%;
365; Conservative C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE: CDNA to mRNA HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 969 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INDIVIDUAL ISOLATE: INDIVIDUAL ISOLATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: CDS
LOCATION: 61..729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
Matches 365; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Palo Alto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANTI-SENSE: NO ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  USA
                                                                                                                                                                              T 660
                                                                                                                                                                                                                       657 T 657
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   94306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-08-365-486A-27
                                                                                                                                                                                                                                                                                      RESULT 8
US-08-365-486A-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET:
CITY: Pa
                                                                                                 009
                                                                                                                                                                                099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                     d
                                                                                                                                                                                δ
                                                 d
                                                                                                 ઠે
```

```
Houston
                                                                                                                                                                                                                                                                                                                                                                                                                     CITY: Housto
STATE: Texas
                                                                                                                                                                                                                                                                                                                                                                                                                                                   SILL SILL USE
                                                                                                                                                                                                                                                                                                                                                                          ADDRESSEE:
STREET: P.
                                                                                                                                                                       APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                          APPLICANT:
APPLICANT:
APPLICANT:
      US-09-126-109-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            416
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        126 CAGGCAGAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCTGGAACCTCACAT 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 309 GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        537 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT 596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            597 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA 656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    657 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   129 CTCCAAGGAGATCATGACCCTTCACCACCACCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   189 CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  246 GAACGTCAACGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGTGTTACAGCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             366 GACAAACCICAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGGGGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              417 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         429 CGCTGCTGTCCAAGGATCCGGATGGGCTTGGCTTTGAACCCGCTTACTAAGAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  477 TGTTGGTGTCCAAGGCTCAGGTTGGGTTTGGTTTCAATAAGGAACGGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               489 GGAAGTCACCACGCCACCCCCACCAGGACCCTCTGC-----TTACTCCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         600 CIAICICGCIGITIGGICCGITAICAACIACAAGGAGGCAGAGGCCCGAITGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 969;
                                                                                                                                                                                                                                                                                                                                                      human manganese superoxide dismutase EMBL #X59445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 196.2; DB 3; Length
Pred. No. 9.7e-51;
0; Mismatches 218; Indels
                                               8255-0018.30
NAME: Sholtz, Charles K.
REGISTRATION NUMBER: 38,615.
REFERENCE/DOCKET NUMBER: 8255.
TELEPROMUNICATION INFORMATION:
TELEPROME: (415) 324-0860
INFORMATION FOR SEQ ID NO: 27:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                MOLECULE TYPE: CDNA to mRNA HYPOTHETICAL: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 60.7%;
Matches 365; Conservative
                                                                                                                                                                          LENGTH: 969 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                             ORIGINAL SOURCE:
INDIVIDUAL ISOLATE:
INDIVIDUAL ISOLATE:
                                                                                                                                                                                                                                                unknown
                                                                                                                                                                                                                                                                                                               S
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                990 T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      717 T 717
                                                                                                                                                                                                                                                                                                                                                                                                                                        ;
LOCATION:
US-08-880-342-27
                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY:
                                                                                                                                                                                                                                                                                                               ANTI-SENSE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
```

```
280 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAC 339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     160 CAGGCAGAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCCTGGAACCTCACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            189 CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      129 CTCCAAGGAGATCATGACCCTTCACCACACCAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 976;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                               APPLICANT: Chen, Guaxun
APPLICANT: Rhodes, Christopher J.
APPLICANT: Hugl, Sigrun R.
APPLICANT: Hugl, Sigrun R.
APPLICANT: Woulin, Sharon
TITLE OF INVENTION: TO NO-MEDIATED CYTOTOXICITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPETATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/126,109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 196.2; DB 3;
Pred. No. 9.7e-51;
0; Mismatches 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/055,092
FILING DATE: 30-UUL-1997
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US UNKNOWN
FILING DATE: 03-MAR-1998
ATTORNEY/AGBNT INFORMATION:
NAME: MCMillian, Nabeela R.
REGERRANCE/DOCKET NUMBER: UTSD:560
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JMBER: US/09/126,109
                                                                                                                                                                                                                                                                                                                                                              3: Arnold, White & Durkee P.O. Box 4433
                                                                    Thigpen, Anice
Hohmeier, Hans-Ewald
Newgard, Christopher
Sequence 1, Application US/09126109
Patent No. 6171856
                                                                                                                                      Unger, Roger H.
Shimabukuro, Michio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEPHONE: (512) 418-3000
TELEFAX: (512) 474-7577
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH: 976 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 60.7'
Matches 365; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES: 2 CORRESPONDENCE ADDRESS:
                                        GENERAL INFORMATION:
APPLICANT: Thigpe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE: 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
```

α

2.

220

```
281 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCAAAGGGAGATGTTACAGCCCAGAC 340
                                                                                                                                                                                                                                                                      CAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT 248
                                                                                                                                                                                                                                                                                                                                            341 AGCTCTTCAGCCTGCACTGAAGTTCAATGGTGGTGGTCGTATTCAATCATAGCATTTTCTG 400
                                                                                                                                                                                                                                                                                                                                                                                                                    GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                      GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA 451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            452 AĞĞCATCAAACGTGACTTTGĞTTCCTTTGACAAGTTTAAĞGAĞAAĞCTGACGĞCTGCATÜ 511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACT------CACATTCCTAT 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCCAGAGGCCCCGATTGCAGGC 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      692 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DEATH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                         GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA
                                                                                                                          CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                            CTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  512 rerregiereceaegereaegriegegriegerregrirearaagaaegegegerr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          572 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CELL
                                                                                      18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Brown, Robert
APPLICANT: Horvitz, H. Robert
APPLICANT: Rosen, Daniel R.
TITLE OF INVENTION: COMPOUNDS AND METHODS FOR THE DIAGNOSIS,
NUMBER OF SEQUENCES: 53
                                                    Length
                                                                                      Indels
                                                   Score 194.6; DB 2;
Pred. No. 3e-50;
0; Mismatches 219;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 2, Application US/08486953A Patent No. 5849290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      176 Federal Street
                                                 29.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Clark & Elbing
                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
 DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDAL.
STREET: 1, C
 TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              T 752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: US
ZIP: 02110
       ;
US-08-023-980B-2
                                                                       Best Local Sim:
Matches 364;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-08-486-953A-2
                                                                                                                                                              161
                                                                                                                                                                                                                                      221
                                                                                                                                                                                                                                                                        189
                                                                                                                                                                                                                                                                                                                                                                                                                    309
                                                                                                                                                                                                                                                                                                                                                                                                                                                        401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            099
                                                                                                                            69
                                                                                                                                                                                                  129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              752
                                                                                                                                                         pp
                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                599
                                                                                                                                                                                                                                                                                                                                                                                  069
                                                                                                                                                                                                                                                                                                                                                                                                                      629
                 DEATH
                                                    GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                      400 GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGGAGTTGCTGGA
                                                                                                                            GGCTATCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                              451 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGCTGCATC
                                                                                                                                                                                                  CGCTGCTGTCCAAGGATCCGGATGGGCTGGCTTGGACCCGCTTACTAAGAAGCT
                                                                                                                                                                                                                                    rérricererceaecricacerrecerrecerrecerricearraceaececeaecerr
                                                                                                                                                                                                                                                                        GGAAGTCACCACGACCAGGACCTCTGCTTACT-----CACATTCCTAT
                                                                                                                                                                                                                                                                                                          571 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                631 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                    CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               METHODS FOR THE DIAGNOSIS, PREVENTION OF DISEASES OF
SOFTWARE: PatentIn Release #1.0, Version #1.30 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30,162
ER: 00786/177001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: US/08/023,980B
FILING DATE: 26-FEB-1993
CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Brown, Robert
APPLICANT: Horvitz, H. Robert
APPLICANT: Rosen, Daniel R.
TITLE OF INVENTION: COMPOUNDS AND
TITLE OF INVENTION: TREATMENT AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ZIP: 02109-1024
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 2, Application US/08023980B Patent No. 5843641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES: 45
CORRESPONDENCE ADDRESS:
ADDRESSEE: Clark & Elbing LLP
STREET: 585 Commercial Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE/DOCKET NUMBER: 00
TELECOMMUNICATION INFORMATION:
TELEPHONE: 617/723-4123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
LENGTH: 977 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX: 617/723-8962
TELEX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADDRESSEE: ClassTREET: 585 Co
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            r 751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 11
US-08-023-980B-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                      600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STATE:
                                                                                                                            369
                                                                                                                                                                                                  429
                                                                                                                                                                                                                                      511
                                                                                                                                                                                                                                                                        489
                                                                                                                                                                                                                                                                                                                                                540
                                                                                                                                                                                                                                                                                                                                                                                                                                                        691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              751
                                                    309
                                                                                                                                                         g
                                                                                                                                                                                                                               ρp
                                                    à
                                                                                     g
                                                                                                                         ð
                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                       Ωp
                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                         QQ
                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
```

488 571 631

```
780 crecacadacercaeceeradecareareadadeea
                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
ADDRESSEE: Sheridan Ross P.C.
STREET: 1700 Lincoln St., Suite 3500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Kovarik, Joseph E.
REGISTRATION NUMBER: 33,005
REFRENCE/DOCKET NUMBER: 2848-22
TELECOMMUNICATION INFORMATION:
TELEPHONE: (303) 863-9700
TELEFAX: (303) 863-023
INFORMATION FOR SEQ ID NO: 8:
SEQUENCE CHARACTERISTICS:
LENGTH: 3789 base pairs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 3789 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                      USA
                                                                                                                                                                                                                                                                    Denver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE:
                                                                                                                                                                                                                                                                                    STATE: CC COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-075-019-8
                                                         US-09-075-019-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            691
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           189 CAACGCTGCCGAGGAGAGATACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               281 GAACGTCACCGAGGAGGAGTACCAGGAGGCGTTGGCAAAGGGAGGTGTTACAGCCCAGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           161 caggcagaagacacagccrccccaaccraccaracaacracacacccrccaacar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              221 CAACGCGCAGATCATGCAGCTGCACCACGCAAGCACCACGCGGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        309 GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   401 GACAAACCTCAGCCCTAACGGTGGTGGAAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            452 AGCCATCAÁACGTGACTTTGGTTCCTTTGACAAGTTTAÁGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      512 TGTTGGTGTCCAAGGCTCAGGTTGGGTTGGCTTGGTTTCAATAAGGAACGGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         489 GGAAGTCACCACGCCAACCAGGACCCTCTGCTTACT-----CACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 572 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAAGAGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          632 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   692 Tratciaaaagctatitiggaatgtaatcaactgggagaargtaactgaaagatacatgg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 977;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 194.6; DB 2; Length
Pred. No. 3e-50;
0; Mismatches 219; Indels
                                                                                                                                                                                   NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 00786/223002
TELECOMMUNICATION INFORMATION:
TELEPHONE: 617/428-0200
TELEFAX: 617/428-7045
                                                     APPLICATION NUMBER: US/08/486,953A FILING DATE: 07-JUN-1995 CLASSIFICATION: 424
                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/204,052
FILING DATE: 28-FBB-1994
ATTORNEY/AGENT INFORMATION:
PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29.1%;
60.6%;
                                                                                                                                                                                                                                                                                                                    INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
LENGTH: 977 base pairs
TYPE: nucleic acid
STRANDENNESS: single
TOPOLOGY: linear
                   SOFTWARE: FastSeq
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity 60.6
Matches 364; Conservative
OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE: DNA
                                                                       FILING DATE: 07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              T 752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           560 T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-08-486-953A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              752
                                                                                                                                                                                                                                                                                                      TELEX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      П
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                \delta
```

7 126 CATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGG 185 CIGGAAGAACTIGGCICCCTAIGGAICCGAGGAGGCIACCCICTCIGAAGGACCICTCAA 365 426 CACCGCTGCTGTCCAAGGATCCGGATGGGGTGGCTTGGCTTGAACCCGCTTACTAAGAA 485 540 GAATATGCATAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCTGGAACCTCA 599 ----- AAGGGGAGTIGCT 830 366 GAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAAGGTGA 425 831 GGAAGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGAGCTGACGGCTGC 890 Sequence 8, Application US/09075019
Patent No. 619058
GENBEAL INFORMATION:
APPLICANT: UTC IR459
TITLE OF INVENTION: A GENETICALLY MODIFIED MANGANESE
TITLE OF INVENTION: A UPPERCXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE
NUMBER OF SEQUENCES: 12 600 CATCAACGCGCAGATCATGCAGCTGCACACAGCAAGCACGACGCGCCCTACGTGAACAA 186 CCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCA 66 GATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTC Gaps 18; Length 3789; Query Match

29.1%; Score 194.4; DB 3; Length
Best Local Similarity 60.4%; Pred. No. 6.7e-50;
Matches 365; Conservative 0; Mismatches 221; Indels ZIP: 80203
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
CONFUTER: Patentl N Release #1.0, Version #1.30
SOCTWARE: Patentl N Release #1.0, Version #1.30
SOCTWARENT APPLICATION DATA:
APPLICATION NUMBER: US/09/075,019
FILING DATE:
CLASSIFICATION:
ATTORNEY/AGENTI NFORMATION:

```
GAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACCGCTGCT 435
                                                                                                                                                                                                                                                                                                                                                                                                       GTCCAAGGATCCGGATGGGGCTGGCTTGGCTTGAACCCGCTTACTAAGAAGCTGGAAGTC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                          GTCCAAGGCTCAGGTTGGGGTTGGTTTCAATAAGGAACGGGGACACTTACAATT 411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TIACTCACATTCCTATCATCGGA 546
61 CAGATCATGCAGCTGCACCACAGCAGCACCACGCGGCCTACGTGAACAACCTGAACGTC 120
                                                                                        121 acceaegacaagiaccaegacecerreeccaaegeaearerracaeccaeacaecrerr 180
                                                                                                                                                                                241 CTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGAAGCCATC 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       412 GCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACTGCTGGGG 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     547 GITGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGAGCCTGACTATCTC 606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               472 ATTGATGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGATTATCTA 531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: UTC IR459
TITLE OF INVENTION: A GENETICALLY MODIFIED MANGANESE
TITLE OF INVENTION: SUPEROXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE
MUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Sheridan Ross P.C.
                                                                                                                                                                                                                             TIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAAGGCTATC
                                                                                                                                                                                                                                                                                                                                                             292 AAACGIGACTITGGTICCTTITGACAAGTITAAGGAGAAGCIGACGGCIGCAICTGTITGGI
                                                                                                                                       196 GCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              607 GCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCT 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     532 AAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGCT 585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 496 ACCACGACCGCCAACCAGGACCCTCTGC-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1700 Lincoln St., Suite 3500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0,
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 6, Application US/09075019
Patent No. 6190658
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   33,005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELECOMMUNICATION INFORMATION:
TELEPHONE: (303) 863-9700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME: Kovarik, Joseph E. REGISTRATION NUMBER: 33,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: (303) 863-0223
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
LENGTH: 681 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZIP: 80203
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: nucleic strandeDNESS: TOPOLOGY: line
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Denver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY: U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 15
US-09-075-019-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET:
                                                                                                                                                                                                                                                                                                                   376
                                                                                                                                       256
                                                                                                                                                                                                                               316
                                                                                                                                                                                                                                                                                                                                                                                                           436
                                                                                                                                                                                                                                                                                                                                                                                                                                                     352
                                              ð
                                                                                        d
                                                                                                                                       δ
                                                                                                                                                                         d
                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                          951 CTTACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAAGGCCTTATTCC 1010
                                                                                                                                                                                   1011 ACTGCTGGGGATTGATGTGTGGGAGCACGCTTACTACTTCAGTATAAAAATGTCAGGCC 1070
                                                                                                                                                                                                                                                                       1071 TGATTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACAT 1130
                                                                                                                                         596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               76 AAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAG 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     136 GAGATCATGACCTTCACCACACCACCATCACCATCACTTATGTTAACGGCCTCAACGCT 195
    891 ATCTGTTGGTGTCCAAGGCTCAGGTTGGGGTTGGCTTTGGTTTCAATAAGGAACGGGGACA 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 AAGCACAGCTCCCCGACCTGCCCTACGACTCGCCCTGGAACCTCACATCAACGCG 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
APPLICANT: UTC IR459
TILLE OF INVENTION: A GENETICALLY MODIFIED MANGANESE
TITLE OF INVENTION: SUPEROXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                               TGACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGGATTGCA
                                                   CACATTCC
                                                                                                                                         537 IATCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 194; DB 3; Length 594;
Pred. No. 3.7e-50;
0; Mismatches 215; Indels
                                                486 GCTGGAAGTCACCACGACGCCAACCAGGACCCTCTGCTTACT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE: PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         E: Sheridan Ross P.C.
1700 Lincoln St., Suite 3500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2848-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: KOVALIK, JOSEPH E.
REGISTRATION NUMBER: 33,005
REFERENCE/DOCKET NUMBER: 2848
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1, Application US/09075019 Patent No. 6190658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    29.0%;
Local Similarity 60.8%;
Les 361; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEPHONE: (303) 863-9700
TELEPAX: (303) 863-0223
INFORMATION FOR SEQ ID NO: 1:
SEQUIENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 594 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE: CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1..594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                               1131 GGCT 1134
                                                                                                                                                                                                                                                                                                                   657 GGCT 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CITY: Denver
STATE: CO
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  80203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ;
US-09-075-319-1
                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 14
US-09-075-319-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STREET:
                                                                                                                                                                                                                               597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                          d
                                                                                                                                       ð
                                                                                                                                                                            g
                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     \overset{\circ}{\circ}
                                              ò
```

```
2
                                                                                                                                                                                                                                                                    76 AAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAG 135
                                                                                                                                                                                                                                                                                                                                                                       GAGATCATGACCCTTCACCACCAAGGACCATCAGACTTAAGGTAACGGCCTCAACGCT 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           127 ACCGAGGAGAAGTACCAGGAGGAGGTTGGCCAAGGGAGATGTTACAGCCCAGACAGCTCTT 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 247 CTCAGCCCTAACGGTGGAGAACCCA-----AAGGGGAGTTGCTGGAAGCCATC 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              376 GAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGATCTACAACGCTGACACCGCTGCT 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               298 AAACGIGACITIGGITICCITIGACAAGİTIAAĞGAĞAAĞCIĞACĞĞCIĞCAIÇIĞGI 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          358 GTCCAAGGCTCAGGTTGGGTTTGGTTTCAATAAGGAACGGGGACACTTACAATT 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 496 ACCACGACCGCCAACCAGGACCCTCTGC-----TTACTCACATTCCTATCATCGGA 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         547 GITGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTC 606
                                                                                                                                                                                                                                                                                                                                                                                                                         67 cadarcardeagerecaceacadeaageaceaceaceaceraceageaaceaacereaacea 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        316 TIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAGAAGGCTATC 375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           436 GICCAAGGAICCGGAIGGGCIGGCIIGGCIIGAACCCGCIIACIAAGAAGCIGGAAGIC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     418 GCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACTGCTGGGG 477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     478 ATTGATGTGGGGGGGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGATTATCTA 537
                                                                                                                                                                                                                                                                                                                      99
                                                                                                                                                                                                                                                                                                                   7 AAGCACAGCCTCCCCGACCTGCCCTACGACTACGCCCCTGGAACCTCACATCAACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                196 GCCGAGGAGGAGCTACTCGGCCGCTGTGGGAGGAGGAGGATGTGCCTTACCCAGGTTAAGCTT
                                                                                                                                                            Query Match 29.0%; Score 194; DB 3; Length 681;
Best Local Similarity 60.8%; Pred. No. 3.9e-50;
Matches 361; Conservative 0; Mismatches 215; Indels 18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            607 GCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCT 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   538 AAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGCT 591
; MOLECULE TYPE: CDNA
; FEATURE:
; NAME/KEY: CDS
; LOCATION: 1..681
US-09-075-019-6
                                                                                                                                                                                                                                                                                                                                                                          136
                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
```

Search completed: April 1, 2004, 13:45:43 Job time : 60.1302 secs

This Page Blank (uspto)

```
April 1, 2004, 08:33:07; Search time 257.583 Seconds (without alignments) 11033.514 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Toxicity-
Nucleotid
CDNA enco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human man
Human bre
Human man
Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mouse mit
Rat seque
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human man
Human nat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human man
Human cDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lung canc
Human cDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDNA enco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MINSOD CDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Malassezi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Malassezi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Description
                                                                                                                                                                                                                                  1 atgtetgttegageateeet......gattgeaggetgetetetaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Add88977 Add88877 Add88894 Add88894 Add88894 Add88894 Add88780 Add88786 Add88786 Add88786 Add8878 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8991 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8891 Add8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Aat85876
                                                                                                                                                                                                                                                                                                                                                                           6747726
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                     hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                  3373863 seqs, 2124099041 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                         - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAT85894
ADD35245
ABK58236
ADB58236
AAA75734
AAA053193
AAT15589
AAT34277
AAX24998
AAA633891
AAA633891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABN84891
ABA94453
ABX63836
ABX64522
ABX84524
AAZ26542
AAL26545
AAT31018
AAQ67474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAT85877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAT85876
                                                                                                                                                                                                                                                                         IDENTITY NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               genesequ2001bs:*
genesequ2002s:*
genesequ2003as:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  geneseqn2001as:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                geneseqn2003bs:*
geneseqn2003cs:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N_Geneseq_29Jan04:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   geneseqn2004s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       geneseqn1980s:*
geneseqn1990s:*
geneseqn2000s:*
                                                                                                                                                                                                                                                                                                                                                                                                            Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                             US-09-727-855B-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1492
1438
813
813
813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9:
                                                                                                                                                                                                                                                                                                                                                                         oĘ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 250.6
220.6
211.4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 205
203.4
203.4
199.4
199.4
199.4
199.4
199.8
199.8
197.8
197.8
197.8
197.8
197.8
                                                                                                                                                                                           Title:
Perfect score:
                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                       Total number
                                                                           OM nucleic
                                                                                                                                                                                                                                    Sequence:
                                                                                                                                                                                                                                                                                                                                  Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Database
                                                                                                                Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Result
No.
```

Aax33940 Human HCM	Aax08429 Human man	Abz83721 Toxicolog	Aaf14076 Asperdill	Aav45115 A. fumiga	Aav73824 Human SÕD	Aaz39782 Plasmid p	Aaz39779 Human man	Aaq20194 Mn-SOD (I		Aaz39781 Human man	Ade76309 Human BSK	Abt09580 Phase-1 R	Aag70432 MHS2:MnSO	Abn98977 Arabidops	Aac51219 Arabidops	Aac40144 Arabidops	Ade25718 Human cDN	Aan81224 cDNA of f	Aaq94277 Human man		Aan81225 cDNA of f
AAX33940	AAX08429	ABZ83721	AAF14076	AAV45115	AAV73824	AAZ39782	AAZ39779	AAQ20194	AAQ70431	AAZ39781	ADE76309	ABT09580	AAQ70432	ABN98977	AAC51219	AAC40144	ADE25718	AAN81224	AAQ94277	ABZ56304	AAN81225
7	(1	7	'n	0	7	C)	c	N	N	m	6	9	N	9	m	m	თ		7	7	٦
976	916	976	702	624	977	3789	594	609	627	681	930	999	627	817	928	930	894	009	600	631	009
29.3	29.3	29.3	29.3	29.5	29.1	29.1	29.0	29.0	29.0	29.0	28.9	28.9	28.5	28.1	28.1	28.1	27.7	27.6	27.6	•	27.3
196.2	196.2	196.2	195.8	195.2	194.6	194.4	194	194	194	194	193.6	193.4	190.8	188	188	188	185.4	184.4	184.4	184.2	182.8
٠.																					

ALIGNMENTS

RESULT 1

Malassezia; fungus; antigenic; human; IgE; immunoglobulin E; antibody; allergy; antigen; ds. Malassezia fungus MF-3 antigenic protein encoding cDNA /product= "MR-3_antigenic_protein" BP. 728 Location/Qualifiers 4. .621 to mRNA; (revised)
(first entry) ๗ AAT85876 standard; cDNA /*tag= WO9721817-A1 27-AUG-2003 23-FEB-1998 19-JUN-1997 Malassezia AAT85876; **AAT8587**6

96WO-JP003602 10-DEC-1996;

Kuroda M, Yagihara T, Yamaguchi H; 95JP-00346627. 96JP-00257612. 96JP-00257613. TAKI) TAKARA SHUZO CO LID Takesako K, Okado T, Akiyama K, Yasueda H, 05-SEP-1996; 05-SEP-1996;

12-DEC-1995;

Kato I;

Onishi Y,

Antigenic proteins from the fungus Malassezia - bind to IgE antibodies present in patients with Malassezia allergies, useful for diagnosis, treatment and prevention of such conditions. WPI; 1997-332788/30. P-PSDB; AAW29770.

Claim 53; Page 76-77; 162pp; Japanese.

The present sequence encodes a specifically claimed antigenic protein

/product= "MR-4_antigenic_protein"

```
314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    494
                                                                                                                                                                                                                                                                                                                                                                                                                                            74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     372
                                                                                                                                                       Takesako
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                194
                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                       367
                                                                                                                                             127
                                                                                                                                                                                        187
                                                                                                                                                                                                             127
                                                                                                                                                                                                                                247
                                                                                                                                                                                                                                                       187
                                                                                                                                                                                                                                                                             307
                                                                                                                                                                                                                                                                                                 247
                                                                                                                                                                                                                                                                                                                                             307
                                                                                                                                                                                                                                                                                                                                                                                      367
                                                                                                                                                                                                                                                                                                                                                                                                            487
                                                                                                                                                                                                                                                                                                                                                                                                                                 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                       547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 607
                                                                                                                                                                                                                                                                                                                                                                 AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          redacergeregreceaagaceaagaceceereacaeceaeceaeceaeceaeceareareaer 484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGGATGGCTGGGAGCACGCTGGTACCTGCAGTACAAGAACGACAAGGCTTCCTACCTTA 544
                                                                                                                                                                67
isolated from the fungus Malassezia. The antigenic protein can bind to IgE antibodies present in patients with allergic conditions. Antigenic proteins, peptides and mucleic acids from the fungus Malassezia can be used in the diagnosis, treatment and prevention of allergic conditions due to Malassezia organisms (such as M.furfur, M. sympodialis and M.pachydermatitis). (Updated on 27-AUG-2003 to correct OS field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    fungus; antigenic; human; IgE; immunoglobulin E; antibody;
                                                                                                                                                                                                                                                                                                                       GGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGACCTCTCAAGA
                                                                                                                                                                                                                                                                                                                                                                                      <u> addecarceaecaegaerregecerrreagaaerreaagaceaecrreaacaege</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 548 TIGACAICIGGGAGCACGCITICIACCTICAGIACAAGAACGICAAGCCIGACTAICICG
                                                                                                                                              68 TCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCA
                                                                                                                                                                  rcargacreagracacrerecerereseceraceceracearecereseares
                                                                                                                                                                                       TCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCC
                                                                                                                                                                                                            rereraaggagarcargacggrecacgacagagaggcaccaccagaccracgreaacaacc
                                                                                                                                                                                                                                  TCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGG
                                                                                                                                                                                                                                                       rciaccececedadadeceriacerrandeceacecececeanceacerrangeae
                                                                                                                                                                                                                                                                             rccadergeagagedearcaagricaacdecdecdecacateaaccacrecterrer
                                                                                                                                                                                                                                                                                                                                             GGAAGAACCTGGCCCCCCAGAGGCGAGGTGGCCAACTGAACGATGGCCCTCTCAAGC
                                                                                                                                                                                                                                                                                                                                                                                                            ceecceecarccaecerrceecreecrereicreitecreireccece---Acececaace
                                                                                                                         Gaps
                                                                                                                         3,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCCGATTGC 655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 545 AGGCCTGGTGGAACGTGAACTGGGCCGAGGCCGAGAAGCGCTTCC 592
                                                                                                  Length 728;
                                                                             BP; 205 A; 204 C; 203 G; 116 T; 0 U; 0 Other;
                                                                                                                         200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Malassezia fungus MF-4 antigenic protein encoding cDNA
                                                                                                   , DB 2;
6.6e-66;
                                                                                                  37.7%; Score 252; DB
65.5%; Pred. No. 6.6e
iive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
2. .676
/*tag= a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        standard; cDNA to mRNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   allergy; antigen; ds.
                                                                                                               Similarity
                                                                               Sequence 728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23-FEB-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Malassezia;
                                                                                                                          385;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Malassezia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAT85877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAT85877;
                                                                                                                                                                    ω
                                                                                                                                                                                          128
                                                                                                                                                                                                                                                        128
                                                                                                                                                                                                                                                                               248
                                                                                                                                                                                                                                                                                                    188
                                                                                                                                                                                                                                                                                                                         308
                                                                                                                                                                                                                                                                                                                                              248
                                                                                                                                                                                                                                                                                                                                                                    368
                                                                                                                                                                                                                                                                                                                                                                                        308
                                                                                                                                                                                                                                                                                                                                                                                                              428
                                                                                                                                                                                                                                                                                                                                                                                                                                  368
                                                                                                                                                                                                                                                                                                                                                                                                                                                         488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              425
                                                                                                                                                                                                              68
                                                                                                                                                                                                                                    188
                                                                                                     Query Match
                                                                                                               Local
                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAT8587'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                    ОP
                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
     셤
                                                                                                                                                                                        ð
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                            à
```

```
CAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCA 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAGTTGACA 553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         554 TCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTGCTG 613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The present sequence encodes a specifically claimed antigenic protein isolated from the fungus Malassezia. The antigenic protein can bind to IGE antibodies present in patients with allergic conditions. Antigenic proteins, peptides and nucleic acids from the fungus Malassezia can be used in the diagnosis, treatment and prevention of allergic conditions due to Malassezia organisms (such as M.furfur, M. sympodialis and M.pachydermatitis). (Updated on 27-AUG-2003 to correct OS field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Antigenic proteins from the fungus Malassezia - bind to IgE antibodies present in patients with Malassezia allergies, useful for diagnosis, treatment and prevention of such conditions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICTCIGAAGGACCICTCAAGAAGGCIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCGAGGAATCITITGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                resacceceaciridecresciesacsecarsaassassasireaacseceseses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         434 CTGTCCAAGGATCCGGATGGGGCTGGCTTGGCTTGAACCCGGCTTACTAAGAAGCTGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  134 AGGAGATCATGACCCTTCACCACACCACCATCAGACTTATGTTAACGGCCTCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        132 GCGAGALCATGGAGACGCACTACGAGAAGCACCACCGCACCTACGTCAACAACGTGAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCCAGGTTAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           252 AGCTGAACGCGATCAAGTTCAACGGCGGTGGCCACATCAACCACTCGCTCTTCTGGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    192 cegeggaggacaagercareacececrececaecaecagagecececrececeaarrecec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                           Ĥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .
                                                                                                                                                                                                                                                                                                                              Kato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  812;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 812 BP; 235 A; 245 C; 218 G; 114 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                        Onishi Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Mismatches 214;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 250.6; DB :
Pred. No. 1.8e-65
                                                                                                                                                                                                                                                                                                                              Kuroda M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 56; Page 77-78; 162pp; Japanese.
                                                                                                                                                                                                                                                                                                                           Yagihara T,
Yamaguchi H;
                                                                                                                                                            95JP-00346627.
96JP-00257612.
96JP-00257613.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                37.5%;
                                                                                                         96WO-JP003602
                                                                                                                                                                                                                                                                        LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                        (TAKI ) TAKARA SHUZO CO
                                                                                                                                                                                                                                                                                                                           Okado T,
Yasueda H,
                                                                                                                                                                                                                                                                                                                                                                                                              1997-332788/30.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                          P-PSDB; AAW29771
WO9721817-A1
                                                                                                            10-DEC-1996;
                                                                                                                                                                                      05-SEP-1996;
05-SEP-1996;
                                                                                                                                                                                                                                                                                                                              Α,
                                                                                                                                                                  12-DEC-1995;
                                                      19-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches 379;
                                                                                                                                                                                                                                                                                                                                                           Akiyama K,
```

0

193

191

131

253

251

313

311

433

431

373

300 477

420 537

597

 δ

```
AACGCGCGCGCCCCGGGCATCCAGGCTATCGGCTGGGCTGGGCTCGGCCTGAACCCCACG 360
                      TCTCTGTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGA
                                                                                                                                        GAGCTGCGCTCCGCGATCGACCGCGACTTTGGCTCGGTCGACGCCATGAAGGAGAAGTTC
                                                                                                                                                                                            AACGCTGACACCGCTGCTGTCCAAGGATCCGGATGGGGCTTGGCTTGGACCCGCTTT
                                                                                                                                                                                                                                                                              ACTAAGAAGCTGGAAGTCACCACGACCGCCAAGCCAGGACCCTCTGCTTACTCATTCCT
                                                                                                                                                                                                                                                                                                                         Acecagaadecresacarcacsaccessaccassaccassacces
                                                                                                                                                                                                                                                                                                                                                                   ATCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCT
                                                          recercirciosaasaaceresesesaasaasaasesesesesesaseresasereseses
                                                                                                         CCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Procaccio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 2; SEQ ID NO 3025; 201pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               oxidative stress; apoptosis; aging.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kerstann K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             30-AUG-2001; 2001US-0316323P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0-AUG-2002; 2002WO-US027886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADD35245 standard; DNA; 897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Levy S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2003-300821/29.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCTGCTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAGGCGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (UYEM-) UNIV EMORY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO2003020220-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mitochondrial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .5-JAN-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Wallace DC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-MAR-2003.
                      298
                                                                181
                                                                                                         358
                                                                                                                                                                                              418
                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                 478
                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                      538
                                                                                                                                                                                                                                                                                                                                                                                                                                                         598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADD35245;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADD35245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                      à
                                                                                                                                             g
                                                                                                                                                                                         δ
                                                                                                                                                                                                                                  Dp
                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                      611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The present sequence represents a PCR amplification fragment of the MF-4 antigenic protein isolated from the fungus Malassezia. The antigenic peptide can bind to IgB antibodies present in patients with allergic conditions. Antigenic proteins, peptides and nucleic acids from the fungus Malassezia can be used in the diagnosis, treatment and prevention of allergic conditions due to Malassezia organisms (such as M.furfur, M. sympodialis and M.pachydermatitis). (Updated on 27-AUG-2003 to correct OS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Antigenic proteins from the fungus Malassezia - bind to IgE antibodies present in patients with Malassezia allergies, useful for diagnosis, treatment and prevention of such conditions.
                                                                                                                                                                                                                                                                                                                                                                                                   Malassezia; fungus; antigenic; human; IgE; immunoglobulin E; antibody;
allergy; antigen; PCR primer; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    118 GAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 GAACCTGCTTTCTGGGGGGGGATAATGGAGGACGCACTACGAGAAGCACCACCGCACCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         178 GITTAACGGCCTCAACGCTGCCGAGGAGATTACTCGGCCGCTGTGGGCAAGGAGGATGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 Grchachacterghacececeeaheanachearcanteacececececece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCGGCGAGATTGCGCAGCTGACGCGATCAANTTCATCGGCGGTGGCCACATCAACCAC
CGTGGGAGCACGCGTTCTACCTGCAGTACAAGAACGTCAAGGCCGACTACTTCAAGGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                        Malassezia fungus MF-4 antigenic protein PCR amplification fragment.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;
0
                                                                                                         rcricia cercarca a crirra a casa de cosa da a concrea a casa de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de concrea de con
                                                                TTTGGTCCGTTATCAACTACAAGGAGGCAAGGCCCGATTGCAGGCTGCTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 630 BP; 156 A; 191 C; 180 G; 101 T; 0 U; 2 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    γ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Onishi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Mismatches 206;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .1e-56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kuroda M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           33.0%; Score 220.6;
62.5%; Pred. No. 2.10
                                                                                                                                                                                                                    BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Example 14; Page 99; 162pp; Japanese.
                                                                                                                                                                                                                    AAT85894 standard; cDNA to mRNA; 630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Yagihara T,
Yamaguchi H;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            96WO-JP003602.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       95JP-00346627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               96JP-00257613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (TAKI ) TAKARA SHUZO CO LTD.
                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        343; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           T,
H,
                                                                                                                                                                                                                                                                                                            (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Yasueda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1997-332788/30.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO9721817-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10-DEC-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               05-SEP-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12-DEC-1995;
                                                                                                                                                                                                                                                                                                     27-AUG-2003
23-FEB-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             05-SEP-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Malassezia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Akiyama K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            238
                                                                                                           612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Takesako
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Loca
Matches
                                                                                                                                                                       RESULT 3
                                                                                                                                                                                                AAT85894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
```

```
The invention relates to a novel array comprising at least two isolated nucleotide molecules, each molecule having a sequence capable of uniquely hybridising to a nucleic acid molecule which is an expression product of a gene involved in mitochondrial blology. The array comprises two or more isolated nucleic acid molecules or spots, each molecule having a sequence chosen from sequence of 994 human probes and 2046 mouse probes. An array
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Array containing probes for genes involved in mitochondrial biology, useful for determining mitochondrial biology gene expression profiles for use in diagnosing pathologies and identifying biochemical pathways.
                                                                                                                       657
                                                                                                                                                                                                                                   481 GACTACTICAAGGCGAICTGGACCGIGAICAACTITGAGGAGGCCGAGAAGCGICTCANG 540
421 creatroscarccarocorocoaccacocoracracrococorocacaacaacorcaagec 480
                                                                                                                       GACTATCTCGCTGCTGTTTTGGTCCGTTATCAACTACAAGAGGCAGAGGCCCGATTGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          array; mitochondrial; hybridisation; energy-metabolism; ial disease; oxidative phosphorylation dysfunction;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mouse mitochondrial DNA sequence SEQ ID NO:3025
```

The first invention is useful in the conditions allowing an expression picture of a conditions allowing selective hybridisation, and measuring hybridisation of nucleic acid in the sample to the array to produce an expression profile. The array is also useful for determining an expression profile. The array is also useful for determining an expression profile. The array is also useful for determining an expression profile of a first labelled sample containing nucleic acid. The second sample is a reference or a standard. An array is useful for determining an expression profile diagnostic of an energy-metabolism-condition. An array of the invention is useful for determining mitochondrial biology gene expression profiles of organisms, canch as human, mice and closely related species, tissue and organisms, such as human, mice and closely related species, tissue and organisms, canch are useful for determining expression profiles of diagnostic of energy metabolism-related physiological conditions, identifying biochemical conditions, diagnostic of energy metabolism-related physiological conditions, identifying therapeutic agents useful for preventing and/or reating such physiological conditions, evaluating and/or monitoring the efficacy of physiological conditions, evaluating and identifying and madels of human cenergy metabolism-related physiological conditions. An array is also useful for defining expression signatures or profiles for mitochondrial condition oxidative nhormhorvlation (OxpHoR) dusfunction, oxidative result from oxidative nhormhorvlation (OxpHoR) dusfunction, oxidative result from oxidative phosphorylation (OXPHOS) dysfunction, oxidative stress, apoptosis and aging. An array of the invention contains probes of genes not previously recognised to participate in mitochondrial biology. The sequences shown in ADD31224-ADD35260 represent murine mitochondrial DNA clones used to make the probes of the invention. Some sequences are not present, these are SEQ ID NO's 295, 1174, 1213, 1700, 1728, 1730, 1905, the invention is useful for determining an expression profile of a 2408 and 2643.

Sequence 897 BP; 225 A; 214 C; 247 G; 211 T; 0 U; 0 Other;

2 357 428 648 128 177 188 237 248 297 368 408 488 599 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT 178 TAACGCGCAGATCATGCAGCTGCACCACGCAAGCACCATGCGGCCTACGTGAACAACCT CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT cacrétricadecidedacireaagiricaaragiregagagacararraareacearirriere GAAGAACTIGGCTCCCTAIGGAICCGAGGAGGCIACCCTCTCTGAAGGACCTCTCAAGAA -----AAGGAGAGTIGCIGGA GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC GGCTATICAAGCGTGACTTTTGGGTCTTTTGAGAAGTTTTAAGGAGAAGCTGACAGCCATGTC CGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGAACCCGGCTTACTAAGAAGCT 469 réredegadriccaaderricadecredederrederridecrireaaraagageageregerri ---TTACTCACATTCCTAT 529 ACAGATIGCIGCIGCICIAAICAGGACCCATIGCAAGGAACAACAGGCCITATICCGCT CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA 589 GCTGGGGATTGACGTGTGGGAGCACGCTTACTACCTTCAGTATAAAACGTCAGACCTGA Gaps 18; Length 897; Indels Score 211.4; DB 9; Pred. No. 1.5e-53; 0; Mismatches 196; GACAAACCTGAGCCCTAAGGGTGGTGGAGAACCTA GGAAGTCACCACGACGCCAACCAGGACCCTCTGC 31.6%; 63.2%; Local Similarity 63.2 hes 367; Conservative 69 118 129 189 238 298 309 358 369 409 429 489 Query Match Matches g g g g à g g ò g g ð 셤 à ठे ò ò ∂ ₽

identifying the expression level in a tissue or cell of at least one gene listed in the specification. The method is useful for elucidating global changes in gene expression and for identifying toxicity markers in tissues or cell exposed to a known toxin. The genes may be used as

toxicity markers in drug screening and toxicity assays. The genes and gene expression information may be used as diagnostic markers for the

600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGG 640

 δ

```
The invention relates to methods for predicting toxic effects of compounds or the progression of these toxic effects by determining the global changes in gene expression in tissues or cells exposed to the coxin and comparing these to gene expression in unexposed tissues or cells. Also included are methods of predicting at least one toxic effect of a compound or progression of a toxic effect, preferably the hepatocoxicity of a compound, comprising detecting the level of expression in a tissue or cell sample exposed to the compound of two or more genes listed in the specification, where differential expression of the genes is indicative of at least one toxic effect or progression of the genes and predict cellular pathways that a compound modulates the toxic response and predict cellular pathways that a compound modulates in a cell. The methods utilise a set of at least two probes on a solid support in kit form), where each of the probes comprises a sequence that specifically hybridises to a gene listed in the specification, a computer system comprising at ababase containing information identifying the expression level in a tissue or cell sample exposed to a hepatotoxin of a cell and a substitution of a present information and a user interface to view the information present information and a user interface to view the information where the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the probes of the 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               toxic effects of compounds or the progression of these toxic determining the changes in gene expression in tissues or cells the toxin and comparing these to gene expression in unexposed
                                                                                                                                                                                                                                                                          Rat sequence differentially expressed in response to a hepatotoxin #1627.
                                                                                                                                                                                                                                                                                                                      hepatotoxin; expressed sequence tag; EST; drug screening;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Elashoff MR;
                                                                                                                                                                                                                                                                                                                                         differential expression; centrilobular necrosis; steatosis.
649 CTATCTGAAAGCTATTTGGAATGTAATCAACTGGGAGAATG 689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Castle AL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 1; SEQ ID NO 1627; 239pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Johnson KR,
                                                                                                                                       BP
                                                                                                                                     ABK63720 standard; cDNA; 1492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30-JUL-2001; 2001WO-US023872.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000US-0222040P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000US-0244880P.
2001US-0290029P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2001US-0290645P.
2001US-0292336P.
2001US-0295798P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2001US-0297457P.
2001US-0298884P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001US-0303459P
                                                                                                                                                                                                                              '(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Porter MW,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (GENE-) GENE LOGIC INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2002-241625/29.
                                                                                                                                                                                                                                                                                                                                                                                        Rattus norvegicus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cells.
                                                                                                                                                                                                                                                                                                                                                                                                                                  WO200210453-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  15-MAY-2001;
22-MAY-2001;
06-JUN-2001;
13-JUN-2001;
19-JUN-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    09-JUL-2001;
                                                                                                                                                                                                                              18-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          02-NOV-2000;
11-MAY-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-FEB-2002,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Predicting teffects by cexposed to t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tissues or
                                                                                                                                                                                    ABK63720;
                                                                                                                                                                                                                                                                                                                         88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mendrick
                                                                                             RESULT 5
                                                                                                                  ABK63720
                         셤
```

```
2
                                                                                                                                                                               128
                                                                                                                                                                                                                                                                                                                                                               308
prediction or identification of the physiological state of tissue or cell sample that has been exposed to a compound or agent. Hepatotoxicity is characterised by centrilobular necrosis and steatosis. The present sequence is an expressed sequence tag (BST) or cDNA derived from a gene which is differentially expressed in response to a hepatotoxic agent
                                                                                                                                                                                                                                                                                                    248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         539
                                                                                                                                                                                                             193
                                                                                                                                                                                                                                           188
                                                                                                                                                                                                                                                                        253
                                                                                                                                                                                                                                                                                                                                  313
                                                                                                                                                                                                                                                                                                                                                                                           373
                                                                                                                                                                                                                                                                                                                                                                                                                           GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                     424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA 599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCTGGGGATTGATGTGTGGGAGCACGCTTACTATCTTCAGTATAAAAAACGTCAGACCTGA 664
                                                                                                                                                                                 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                             cedecacadadeacadecrecerdacerdecriaceacraraceedecreadecedeacar
                                                                                                                                                                                                                                           129 CTCCAAGGAGATCATGACCCTTCACCACACCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                            TAACGCGCAGATCATGCAGCTGCACCACAGAACAAGCACCACGGACCTACGTGAACAATCT
                                                                                                                                                                                                                                                                                                      CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                         recretricascerscaersaasireaarssessessesestarearcaeascarrirers
                                                                                                                                                                                                                                                                                                                                                                                                                                                     GACAAACCTGAGCCCTAAGGGTGGTGGAGAACCCA-----AAGGAGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GGCTATCAAGCGTGACTTTGGGTCTTTTGAGAAGTTTAAGGAGAAACTGACAGCTGTGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGTGGGAGTCCAAGGTTCAGGCTGGGCTTGCTTTCAATAAGGAGCAAGGTCGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGAAGTCACCACGACGGCCAACCAGGACCCTCTGC-----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  545 ACAGATTGCCGCCTGCTCTAATCAGGACCCACTGCAAGGAACCACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                     18;
                                                                                                                      Length 1492;
                                                                                           Sequence 1492 BP; 380 A; 328 C; 392 G; 392 T; 0 U; 0 Other;
                                                                                                                                                  0; Mismatches 200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CIATCICGCIGCIGITIGGICCGITAICAACTACAAGGAGG 640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTATCTGAAAGCCATTTGGAATGTAATCAACTGGGAGAATG
                                                                                                                      Score 205; DB 6;
Pred. No. 1.7e-51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Toxicity-related gene, SEQ ID 3262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADB58236 standard; DNA; 1492
                                                                                                                       30.68;
                                                                                                                                     62.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                    Query Match
Best Local Similarity 62.5
Matches 363; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           04-DEC-2003
                                                                                                                                                                                 69
                                                                                                                                                                                                                                                                          194
                                                                                                                                                                                                                                                                                                                                                               249
                                                                                                                                                                                                                                                                                                                                                                                             314
                                                                                                                                                                                                                                                                                                                                                                                                                           309
                                                                                                                                                                                                                                                                                                                                                                                                                                                        374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADB58236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
    8866666
                                                                                                                                                                                   à
                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                      à
```

The present invention relates to a method for predicting a toxic effect of a compound. The method comprises preparing a gene expression profile cof a tissue or cell sample exposed to the compound, and comparing the gene expression profile to a database compusing SEQ ID 1-4925, where differential expression of the gene indicates at least one toxic effect. The method is useful for predicting at least one toxic effect. The method is useful for predicting at least one toxic effect of a compound, identifying an agent that modulates the onset or progression of a toxic response, predicting the cellular pathways that a compound modulates in a cell, and identifying an agent that modulates at least one activity of a protein. The method and compositions of the present invention using a database of genes having liver toxin-induced differential expression, are useful in identifying toxicity markers in sequence data for this patent did not form part of the printed sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO

ftp.wipo.int/pub/published_pct_sequences.

Predicting a toxic effect of a compound, useful in identifying toxicity markers in liver tissues or cells for drug screening and toxicity assays, comprises preparing gene expression profile of tissue or cells exposed to the compound.

Claim 1; SEQ ID NO 3262; 1156pp; English

Elashoff

Ą Castle

Higgs B,

Johnson K,

Porter M,

Mendrick D,

WPI; 2003-689530/65

(GENE-) GENE LOGIC INC.

2002US-0364045P. 2002US-0364055P. 2002US-0436643P.

31-JAN-2002; 15-MAR-2002; 15-MAR-2002; 30-DEC-2002;

2002US-000600B7

```
2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         484
                                                                                                                                                                                                                                                                                                                                                                                                                                 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                   193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          recretricaecciecacteaacircaareeceeeecearareaacaecarritere
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TAACGCGCAGATCATGCAGCTGCACCACAGCAAGCACCACGCGACCTACGTGAAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAAGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAACGTCACCGAGGAGAAGTACCACGAGGCGCTGGCCAAGGGAGATGTTACAACTCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAAGAACTIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACAAACCTGAGCCCTAAGGGTGGTGGAGAACCCA-----AAGGAGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         decraricaaccergactringegrichtringagaagrichaaggagaagaactgacagcigterc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             485 TGTGGGAGTCCAAGGTTCAGGCTGGGTTGGCTTGGCTTCAATAAGGAGCAAGGTCGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTCCAAGGAGATCATGACCCTTCACCACCACCAGCCCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                             18;
                                                                                                                                                                                                                                                                                                                                                                       Sequence 1492 BP; 380 A; 328 C; 392 G; 392 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                          Score 205; DB 9; Length 14:
Pred. No. 1.7e-51;
0; Mismatches 200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGAAGTCACCACGACCCCAACCAGGACCCTCTGC
                                                                                                                                                                                                                                                                                                                                                                                            30.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                               363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      489
                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                      Best Loca
Matches
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             \stackrel{>}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
```

expression profile; hepatotoxicity; liver;

screening; toxicity assay; ds.

gene

Toxic; toxin;

drug

31-JAN-2003; 2003WO-US003194.

WO2003064624-A2

07-AUG-2003

Unidentified

엄 à g

à

428

367

488

487

```
GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      548 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACTACGTATAAAAAACGTCAGACCTGA 607
                                                                                                                                                                                                                                                                                                                                                                 GGCTATCAAGCGTGACTTTTGGGAAGTTTAAGGAGAAACTGACAGCTGTGTC 427
                                                                                       137 TAACGCGCAGATCATGCAGCTGCACCACGCAAGCACCACGCGACCTACGTGAAATCT
                                                                                                                                                                                                                            77 ccascacaaascacacaccrccrcaccraccrracaacrarsacscacacar
                                                                                                                                                                 197 GAACGTCACCGAGGAGAAGTACCACGAGGCCTGGCCAAGGGAGATGTTACAACTCAGGT
                                                                                                                                                                                                  GACAAACCTGAGCCCTAAGGGTGGTGGAGAACCCA-----AAGGAGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                   GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                  428 TGTGGGAGTCCAAGGTTCAGGCTGGGCTGGCTTGGCTTCAATAAGGAGCAAGGTCGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  488 ACAGATTGCCGCCTGCTCTAATCACGACCCACTGCAAGGAACCACAGGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                   129 CTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                  189 CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                   489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC-----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human manganese superoxide dismutase; ds cDNA; oxygen free radicals.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGG 640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTATCTGAAAGCCATTTGGAATGTAATCAACTGGGAGAATG 648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cDNA encoding human manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
43. .711
/*tag= a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nimrod A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    87US-00032734.
88US-00161117.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   88EP-00104880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (BIOT-) BIO-TECHNOLOGY GEN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hartman JR, Beck Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1988-272584/39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAN81158 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22-OCT-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25-MAR-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-MAR-1987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-FEB-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28-SEP-1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EP284105-A
                                                                                                                                                                                                                                 257
                                                                                                                                                                                                                                                                                                   317
                                                                                                                                                                                                                                                                                                                                                                  368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   608
                                                                                                                                                                                                  249
                                                                                                                                                                                                                                                                309
                                                                                                                                                                                                                                                                                                                                   369
                                                                                                                                                                                                                                                                                                                                                                                                   429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAN81158;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ношо
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 8
AAN81158
                                                                                                                                                            셤
                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                 8
                                                                                                셤
                                                                                                                                 ò
                                                                                                                                                                                                \delta
                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The specification describes the use of a recombinant adeno-associated virus (rAN) composition. The rANV comprises a polymucleotide sequence encoding a mammalian catalase or superoxide dismutase polymeptide to reduce demyelination in an optic nerve. The rANV are useful for scavenging reactive oxygen species in a mammal suspected of having optic neuritis, to reduce the effects of demyelinating disease in a mammal and prophylactically used to suppress blood brain barrier disruption in a mammal having identified allergic encephalomyelitis. The rAAV composition is useful for reducing symptoms associated with demyelinating diseases such as optic neuritis, multiple sclerosis, allergic encephalomyelitis, where the symptoms associated with these disease include optic disk edema, increase of optic nerve cell count, disruption of blood brain demyelination of axons. The present sequence is expressed using the rAAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2
 604
                                                                                                                                                                                                                                                                                                                                              Adeno-associated virus; catalase; superoxide dismutase; demyelination; optic nerve; reactive oxygen species; optic neuritis; optic disk edema; demyelinating disease; allergic encephalomyelitis; multiple sclerosis; allergic encephalomyelitis; blood brain barrier; ss.
545 ACAGATTGCCGCCTGCTCTAATCAGGACCCACTGCAAGGAACCACAGGCCTTATTCCACT
                               540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                               605 GCTGGGGATTGATGTGTGGGAGCACGCTTACTATTCTTCAGTATAAAAACGTCAGAACCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Use of recombinant adeno-associated virus composition for treating demyelinating disorders e.g. multiple sclerosis and allergic encephalomyelitis, comprises viral constructs expressing catalase or
                                                                                                                                                                                                                                                                                                                Nucleotide sequence of a manganese superoxide dismutase (Mn SOD).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1438;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1438 BP; 371 A; 315 C; 368 G; 384 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGG 640
                                                                                                                                 CTATCTGAAAGCCATTTGGAATGTAATCAACTGGGAGAATG 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30.4%; Score 203.4; DB 3;
llarity 62.3%; Pred. No. 5.1e-51;
Conservative 0; Mismatches 201;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; Page 75-76; 78pp; English.
                                                                                                                                                                                                                  ВР
                                                                                                                                                                                                                AAA75734 standard; DNA; 1438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-MAR-2000; 2000WO-US006839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99US-0124398P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hauswirth WW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QI X.
HAUSWIRTH W W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                superoxide dismutase.
                                                                                                                                                                                                                                                                                (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2000-618854/59.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200054595-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ωi Χ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                L5-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GUY
                                                                                                                                                                                                                                                                                22-JAN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 362;
                                                                                                                                                                                                                                                                                                                                                                                                                                Synthetic
                                                                                                009
                                                                                                                                                                                                                                               AAA75734;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (VIXX/) (HAUS/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (GUXA/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Guy J,
                                                                                                                                                                                                  AAA7573
```

g

원 8 g ₹ qq à a à qq à

à

1

```
MnSOD; manganese superoxide dismutase; N-terminal; catalyst; reperfusion; injury; ischaemia; superoxide; SO; molecular oxygen; anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (BIOT-) BIO-TECHNOLOGY GENERAL CORP.
                                                                                                                                                        cocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 1; Fig 1a-1c; 27pp; English.
                                                                                                                                                                                                                         /product= "MnSOD"
                                                                                                                                                                                                                                                                                                                                                                                                                                85US-00801090.
86US-00907051.
86IB-00002851.
87US-00032734.
89US-00453057.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tch 29.8%; al Similarity 61.1%; 367; Conservative
                                                                                                                                                                                                                                                                                                                                                                                    92US-00912213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 1993-404931/50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P-PSDB; AAR44801
                                                                                                                                                                                                                                                                                                                                                                                                                                22-NOV-1985;
12-SEP-1986;
29-OCT-1986;
27-MAR-1987;
                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                    10-JUL-1992;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13-DEC-1989;
                                                                                                                                                                                                                                                                                     US5270195-A.
                                                                                                                                                                                                                                                                                                                                       14-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Beck Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Loca
Matches
          SO CCC CCC X SS X TH TH X X P X X P X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X P X 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        698
                                                                                                                                                                                                                                                                                                                                                                                                                                        128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and is inserted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 348 GACAAACCTGAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC-----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    519 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                579 GCTGGGGATTGATGTGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         600 CIAICICGCIGCIGITIGGICCGITAICAACIACAAGAGGAGGCCAGAGGCCCGAITGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        639 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              399 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                        CAGGGCAAAGCATACCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    429 CGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGGACCCGCTTACTAAGAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     459 retregrerezaksecreaserresserrescrresrrrearrasecanosserr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cadecadaadcacaccicccaaccideceraceacraedacciccideaaccicacar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CICCAAGGAGATCAIGACCCITCACCACCACCAAGCACCAICAGACTIAACGGCCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        189 CAACGCTGCCCAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         228 gaacgrcaccgaggagagaacaagaggcgrrcgccaagggagargrracagcccaaar
                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                       Recombinant human manganese superoxidedismutase - used for treating reperfusion injury, inflammation, arthritis, bronchial pulmonary dysplasia or lung fibrosis.
                                                                                                                                                                                                                                                                                                                                                                                         18;
                                                                                                                                                                                                                                                                                                                                          Length 813;
                                                                                                                                                                                                                                                                                        Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                               The cDNA encodes human manganese superoxide dismutase, into a plasmid, eg pMSE-4 (ATCC 53250)
                                                                                                                                                                                                                                                                                                                                          DB 1;
                                                                                                                                                                                                                                                                                                                                                                                         0; Mismatches 216;
                                                                                                                                                                                                                                                                                                                                       Score 199.4; DB 1
Pred. No. 6.4e-50;
                                                                                                                                                               Disclosure; Page ?; 46pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          813
                                                                                                                                                                                                                                                                                                                                          29.8%; al Similarity 61.1%; 367; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAQ53193 standard;
               P-PSDB; AAP80551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25-MAR-2003
21-JUN-1994
                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Si
Matches 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAQ53193;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               669
                                                                                                                                                                                                                                                                                                                                                                                                                                              69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    309
```

Mrsod cona

AAQ53193
ID AAQ5
XX
XX
AC AAQ6
DT 25-N
DT 21-U
XX
XX
XX
XX
XX
XX
XX
XX
XX
XX

RESULT 9

à g à

셤 δ g à 엄

```
2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAGAACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICICIGAAGGACCICICAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GACAAACCTCAGCCCTAACGGTGGTGGAACCCA-----AAGGGGAGTTGCTGGA 398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    399 agccarcaacgroscririgericcririgacaagriraaggagaagcroacgcrigcard 458
                                                                                                                                                                                                              The sequence encodes a maganese superoxide dismutase which can be used t catalyse the reduction of superoxide (SO) radicals to hydrogen peroxide and molecular oxygen. It can be used to reduce reperfusion injury following ischaemia and prolong the survival of excised organs. It can also me used as a long acting anti-inflamatory drug. (Updated on 25-MAR-2003 to correct PF field.) (Updated on 25-MAR-2003 to correct PR field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          228 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GGCTATCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    189 CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  108 caddengaadcacadcirccedaccireceracacracdecieceradaaccircacar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             129 CICCAAGGAGAICAIGACCTICACCACACCAAGCACCAICAGACTIAIGITAACGGCCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
Expression plasmid in Escherichia coli host system - encodes human manganese superoxidedismutase analogue, useful for e.g. treating inflammation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 199.4; DB 2; Length 813;
Pred. No. 6.4e-50;
0; Mismatches 216; Indels 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
```

Φ

Fri

```
gt10 in Escherichia coli, by screening with a 5'-probe (AAT15591) and a 3'-probe (AAT15522). The sequence of the insert in plasmid pMS8-4 (Obtained by subcloning in plasmid pBR322) is shown. The cDNA may be expressed in e.g. E. coli for production of recombinant MASOD. The MMSOD product may be cleaved with Aeromonas proteolytica aminopeptidase to produce an N-terminally truncated analogue with lysine and optionally histidine residues removed. The MMSOD analogue may be used in therapy of conditions associated with generation of coxygen free radicals, particularly synovial inflammation, arthritis and lung fibrosis (claimed). (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                       chádecada a descrice de descrice de contra de a contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de
                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAACGCGCAGATCATGCAGCTGCACCACAGCAGCACCACGCGGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             228 GAACGTCACCAGAGAGGTACCAGGAGGCGTTGGCCAAGGGAGTTTACAGCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACAAACCTCAGCCCTAACGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAGAACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICTCIGAAGGACCICTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGCCATCAAACGTGACTTTGGTTTCAACAAGTTTAAGGAGAAGCTGAGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGTTGGTGTCCAAGGCTCAGGTTGGGTTGGTTTCAATAAGCAACGGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      519 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          579 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                 Length 813;
                                                                                                                                                                                                                                         Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                   DB 2;
                                                                                                                                                                                                                                                                                                    .4e-50;
es 216;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC
                                                                                                                                                                                                                                                                                 Score 199.4;
Pred. No. 6.4e
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human manganese superoxide dismutase cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BP.
                                                                                                                                                                                                                                                                            Query Match
29.8%;
Best Local Similarity 61.1%;
Matches 367; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25-MAR-2003
24-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          - [-1
                                                                                                                                                                                                                                                                                                                                                                                                       108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . 099
                                                                                                                                                                                                                                                                                                                                                                  69
                                                                                                                                                                                                                                                                                                                                                                                                                                                 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAT34277;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAT34277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAT34277
ID AAT3
XX
XX
AC AAT3
DT 25-P
DT 24-C
XX
XX
XX
XX
XX
XX
XX
XX
XX
XX
XX
XX
    à
                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      пþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ਨੂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                            518
    488
                                                                                                                               578
                                                                                                                                                                         599
                                                                                                                                                                                                                 638
                                                                                                                                                                                                                                                           629
                                                                                                                                                                                                                                                                                                698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequence encodes a human manganese superoxide-dismutase (MnSOD), and been isolated from a human T-lymphocyte cDNA library in phage lambda-
                                                                                                                                                                                                                                                    CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAAGAGGCCCGATTGCAGGC
                        579 GCTGGGGATTGATGTGGGGAGCACGCTTACTACTTCAGTATAAAAATGTCAGGCCTGA
CGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGGACCCGCTTACTAAGAAGCT
                                                                                                                                                                  CATCGGAGTTGACATCTGGGAGGACGTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                     --TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                            639 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New human manganese super:oxide dismutase analogues - having a Lys opt. His residue absent from the N-terminus, useful for treating e. synovial inflammation, arthritis or lung fibrosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human; manganese superoxide-dismutase; T-lymphocyte; probe; cDNA; Escherichia coli; plasmid pMS8-4; N-terminal truncation; cloning; aminopeptidase; antiinflammatory; oxygen free radical scavenger; synovial inflammation; arthritis; lung fibrosis; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                product= "Manganese superoxide-dismutase"
fnote= "EC-1.15.1.1"
+1...114
+1...114
                                                                                 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human manganese superoxide-dismutase cDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Example 1; Fig 1; 45pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ä,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (BIOT-) BIO-TECHNOLOGY GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAT15589 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nimrod
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             95EP-00106995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        88US-00161117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     87US-00032734
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*tag= b
115. .708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag= '
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         115. . 7/
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Beck Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1996-059735/07,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P-PSDE; AAR90713
                                                                                                                                                                                                                                                                                                                                     T 660
                                                                                                                                                                                                                                                                                                                                                                               669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25-MAR-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      25-MAR-2003
06-APR-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EP691401-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27-MAR-1987;
26-FEB-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hartman JR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mat peptide
                                                                                                                                                                                                                                                                                                                                                                             - [
                                                                                                                                                                     540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAT15589;
429
                                       459
                                                                                 489
                                                                                                                                                                                                                                                    900
                                                                                                                                                                                                                                                                                                                                     099
                                                                                                                                                                                                                                                                                                                                                                             669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                               à
                                                                                                              엄
                                                                                                                                                          ð
                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                           g
```

698

188 167

Gaps

18;

227 248 287 308

629

```
639 TIAICHAAAAGCIAITIGGAATGIAAICAACIGGGAGAATGTAACTGAAAGAIACATGGC 698
             GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAGAA 368
                                                                                                              399 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                519 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                        579 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                          600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                              348 GACAAACCICAGCCCIAACGGIGGIGGAGAACCCA-----AAGGGGAGIIGCIGGA
                                                                                  GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                       429 CGCTGCTGTCCAAGGATCCGGATGGGGCTTGGCTTGGAACCCGCTTACTAAGAAGCT
                                                                                                                                                                                                                                 489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC------TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                      540 CATCGGAGTIGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Superoxide dismutase; MnSOD; SOD; human; protein engineering; enzyme engineering; antioxidant; antiinflammatory; cytotoxicity; inflammation; reperfusion injury; therapy; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New recombinant human manganese superoxide dismutase proteins.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human native manganese superoxide dismutase cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disclosure; Page 52-53; 61pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98WO-US018842.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAX24998 standard; cDNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       43. .114
/*tag= b
115. .708
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /*tag= a
43. .114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Wick HS, Silverman DN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UYFL ) UNIV FLORIDA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1999-229242/19.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; AAW98169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        669
                                                                                                                                                                                                                                                                                                                                                                                                                                                 660 T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    05-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO9913088-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18-MAR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        T 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAX24998;
                309
                                                                                      369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAX24998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                           qq
                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                              d
                                                                                    à
                                                                                                                  셤
                                                                                                                                                      ð
                                                                                                                                                                                                                                 ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A cDNA clone (AAT34277) codes for human manganese superoxide dismutase (MNSOD) (AAW00018), an enzyme that catalyees the reduction of superoxide radicals to H202 and 02. It was isolated from a human T- cell library cloned into vector grlu using probes (see also AAT34283- 84) based on Partions of mature MNSOD. The MNSOD gene was also dentified (see also AAT34278-82). The cDNA can be used for the produ. of recombinant MNSOD using e.g. Escherichia coli cells as hosts. The MNSOD is useful for reducing reperfusion injury, treating inflammation or bronchial pulmonary dysplasia and for prolonging survival (Excised organs. (Updated on 25-MAR-2003 to correct PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAACGICACCGAGGAGGAGCAGGAGGCGIIGGCCAAGGGAGGIGITACAGCCCAGAI 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           249 TAAGCTICAGICIGCICICAAGTICAAGGAGGAGACACAICAAICACICICIGIICIG 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Use of recombinant human manganese super:oxide dismutase - for treating inflammation or bronchial pulmonary dysplasia, reducing reperfusion injury or prolonging organ survival.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            caggeagaagcacageerceecaacergeecraegaerraegaegeeecergeaacereaar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTCCAAGGAGATCATGACCCTTCACCACACCACCATCAGACTTATGTTAACGGCCT
Manganese superoxide dismutase; MnSOD; reperfusion injury; ischaemia; bronchial pulmonary dysplasia; inflammation; antiinflammatory; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 813;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 199.4; DB 2; Length Pred. No. 6.4e-50; 0; Mismatches 216; Indels
                                                                                    Location/Qualifiers
43. .711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (BIOT-) BIO-TECHNOLOGY GENERAL CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; Fig 1A-1C; 27pp; English
                                                                                                                                                                                                                                                                                                                                            85US-00801090.
86US-00907051.
86IE-0002851.
87US-00453057.
92US-00912213.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29.8%;
                                                                                                                                                                                                                                                                                                            95US-00370461
                                                                                                                                          43. .114
/*tag= b
115. .708
/*tag= c
                                                                                                                               ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                           /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Beck Y;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 1996-361912/36.
P-PSDB; AAW00018.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
Matches 367; Conserv
                                                                                                                                                                                                                                                                                                                                             22-NOV-1985;
12-SEP-1986;
29-OCT-1986;
                                                          Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                          14-SEP-1993;
                                                                                                                                                                                                                                                                                                              09-JAN-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hartman JR,
                                                                                                                                                                                                                                      US5540911-A
                                                                                                                                                                                                                                                                        30-JUL-1996
                                                                                                                                                                                                                                                                                                                                                                                                                         13-DEC-1989
                                                                                                                                                sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                    27-MAR-1987
                                                                                                                                                                                  mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     168
```

q

ò a ò g 8

à

cDNA encoding a human manganese superoxide dismutase.

(first entry)

04-DEC-2000

AAA63891;

```
This cDNA sequence codes for human manganese superoxide dismutase
(hMmSDD) see AAW98169). Novel MnSOD proteins having catalytic activity
which differs from this natural hMmSOD are claimed. The modified proteins
exhibit reduced or no product inhibition, or have greater activity, or
both, compared to natural hMmSOD. The modifications involve one or amin
caid substitutions within the active site of the enzyme, especially at
residues His-26, His-30, Tyr-34, His-74, Gln-143, Asp-159, Trp-161 and
His-163 (see also AAW9817-77). Nucleic acids encoding the modified hMmSOD proteins, or
expression vectors in which modified hMmSOD nucleic acid is linked to a
promoter (preferably mammalian), can be used to protect a cell line from
damage caused by superoxide radicals (claimed). They can also be used to
create subjects suffering from, or at risk of, cytotoxicity caused by
superoxide radicals (claimed), As such, they can be used as antioxidants
in the treatment of a variety of disorders, including inflammation
claimed), reperfusion injury following ischemia (claimed), and cellular
                                                                                                                                                                                                                                                                                                                                                                                                                                   2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAGGCAGAAGCACCTCCCCGACCTGCCCTACGACTACGGCGCCCCTGGAACCTCACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAACGCGCAGATCATGCAGCTGCACCACGAAGCACCACGCGGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAACGCTGCCGAGGAGACTACTCGGCCGCTGTGGCCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAGAACTIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GACAAACTCAGCCCTAACGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GGCTATCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TGTTGGTGTCCAAGGCTCAGGTTGGCTTGGTTTCAATAAGCAACGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCTGGGGATTGATGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                 18;
                                                                                                                                                                                                                                                                                                                                                                                           Length 813;
                                                                                                                                                                                                                                                                                                                                                     Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                               0; Mismatches 216;
                                                                                                                                                                                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                                                                                                                                                                         Score 199.4; DB 2
Pred. No. 6.4e-50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGAAGTCACCACGACGCCAACCAGGACCCTCTGC
                                                                                                                                                                                                                                                                                                                   caused by chemotherapeutic agents
                                                                                                                                                                                                                                                                                                                                                                                           29.8%;
                                                                                                                                                                                                                                                                                                                                                                                                             61.1%;
                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity 61.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             579
                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                   damage
                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
     55555555555555555555X&
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       dd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Пр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
```

BP.

813

AAA63891 standard; cDNA;

RESULT 13 AAA63891

```
5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The present sequence encodes a human manganese superoxide dismutase protein (hMm SOD). The specification describes a modified hMm SOD which has a catalytic activity which differs from natural hMm SOD in that it exhibits reduced or no product inhibition compared to natural hMm SOD. The natural hMm SOD is especially modified with one or more substitutions in amino acids 26, 30, 34, 74, 143, 159, 161 and 163. The modified hMm SOD is useful for protecting a cell from damage caused by superoxide radicals and for treating a subject suffering from cytotoxicity caused by superoxide radicals. The protein is useful for treating inflammation and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Novel human manganese superoxide dismutase protein useful as antioxidant for treating cytotoxicity caused by superoxide radicals, inflammation and reperfusion injury following ischemia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAGGCAGAAGCACACCTCCCCGACCTGCCCTACGACTACGGCGCCCCTGGAACCTCACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                228 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                     Human; manganese superoxide dismutase; hMn SOD; superoxide radical; superoxide radical damage; cytotoxicity; inflammation; ischemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 813;
                                                                                                                                                                                                      /*tag= a /*tag= a /*transl except= (pos: 505. .507, aa: Xaa) /transl_except= (pos: 511. .513, aa: Ala) /product= "manganese superoxide dismutase" /note= "Xaa is Gln or Glu"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 813 BP; 218 A; 203 C; 214 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 199.4; DB 3;
Pred. No. 6.4e-50;
0; Mismatches 216;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    reperfusion injury following ischemia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; Col 25-26; 27pp; English.
                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .,
                                                                                                                                                                                                                                                                                                                                                                                                                98US-00151052
                                                                                                                                                                                                                                                                                                                                                                                                                                            97US-00927230,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29.8%;
llarity 61.1%;
Conservative (
                                                                                                                                                                                                                                                                                            /*tag= b
115. .708
                                                                                                                                                                                                                                                                              43. .114
                                                                                                                  reperfusion injury; ss.
                                                                                                                                                                                                                                                                                                                           /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nick HS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (UYFL ) UNIV FLORIDA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000-578537/54.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P-PSDB; AAB08204.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Silverman DN,
                                                                                                                                               sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                            10-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                     US6107070-A.
                                                                                                                                                                                                                                                                                                                                                                                   22-AUG-2000
                                                                                                                                                                                                                                                                                sig_peptide
                                                                                                                                                                                                                                                                                                          mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     367;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                 Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
```

ď

Gaps

18;

10

188 227 248 287 308 428 458 488 518

```
This purified cDNA encodes both prepro- and mature-manganese superoxide dismutase (MSOD). It is one strand of a double stranded molecule contained in a recombinant vehicle. The MSOD produced catalyses the reaction of hydrogen ions and the SOD radical anion to form hydrogen peroxide and water. It is useful in veterinary and pharmaceutical compsns. for e.g. reducing lesions of reperfusion following ischaemia, to prolong survival time isolated organs and for treating inflammation. See also AAN71371-72. (Updated on 10-MAR-2003 to add missing OS field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  600 CTATCTCGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              348 GACAÁACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 639 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
New DNA coding for polypeptide of human manganese superoxidedismutase useful e.g. for treating inflammation, and new expression vectors and transformed cells.
                                                                                                                                                                                                                                                                                                                             69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                     108 cadecagaadecacaecerecedaecereceriaceaeraceeedeceredaaeerecaear
                                                                                                                                                                                                                                                                                                                                                                                     CTCCAAGGAGATCATGACCCTTCACCACACCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                          CAACGCGCAGATCATGCAGCTGCACCACAGCAACCACCACGCGCCTACGTGAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                           189 CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     228 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTCGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 399 AĞCCATCAAACGTGACTTTĞGTTCCTTTGACAAGTTTTAAGGAĞAAĞCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               519 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                    Length 813;
                                                                                                                                                                                                                                        Sequence 813 BP; 218 A; 204 C; 213 G; 178 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                 Score 197.8; DB 1; Length 8 Pred. No. 2e-49; 0; Mismatches 217; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       489 GGAAGTCACCACGACGCCAACCAGGACCCTCTGC-
                                                               Disclosure; Fig 1; 46pp; French
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABN84891 standard; cDNA; 849
                                                                                                                                                                                                                                                                    Match 29.6%;
Local Similarity 60.9%;
Les 366; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               T 099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              309
                                                                                                                                                                                                                                                                                                                                                                                     129
                                                                                                                                                                                                                                                                                                                                                                                                                  168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABN84891;
                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                     Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 15
ABN84891
ID ABN8
XX
AC ABN8
          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       \delta
                                                                                                                                                                                                                                                                                   578
                                       368
                                                                                                            398
                                                                                                                                       428
                                                                                                                                                                    458
                                                                                                                                                                                                488
                                                                                                                                                                                                                             518
                                                                                                                                                                                                                                                        539
                                                                                                                                                                                                                                                                                                                599
                                                                                                                                                                                                                                                                                                                                            638
                                                                                                                                                                                                                                                                                                                                                                        629
                                                                                                                                                                                                                                                                                                                                                                                                    698
                         369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                          -TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                540 CATCGGAGTTGACATCTGGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                   639 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                              GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                            348 GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                    399 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                519 ACAAATIGCIGCIIGICCAAAICAGGAICCACIGCAAGGAACAACAGGCCIITAIICCACI
                                                                                                                                                                                                                                                                                                                                           579 GCTGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                         600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MSOD; hydrogen peroxide; ischaemia; lesions; inflammation; radicals; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence encoding human manganese superoxide dismutase
                                                                                                                                                                                                                                                          489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /product= "mature MSOD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          85US-00801051.
85US-00801090.
86US-00907051.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86BE-00905796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAN71370 standard; DNA; 813
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (revised)
(revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*tag= b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /*tag=
115. .7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1987-101441/15.
P-PSDB; AAP71370.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (BIOT-) BIO-TECHNOL
                                                                                                                                                                                                                                                                                                                                                                                                                                 T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                             669 I 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          22-NOV-1985;
22-NOV-1985;
12-SEP-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20-NOV-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-MAR-1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BE905796-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAN71370;
                                                                                                                                                                                                                                                                                                                                                                                                                                  099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ношо
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAN71370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                q
                                                 d
                                                                                                          엄
                                                                                                                                       δ
                                                                                                                                                              g
                                                                                                                                                                                                ð
                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                               ŏ
```

698

```
Search completed: April Job time: 262.583 secs
                                                                                                                                                                                                                                                                                                                                                                                          T 660
                                                                                                                                                                                                                                                                                                                                                                                                                     T 756
                                                                                                                                                                                                                              489
                                                                   309
                                                                                                                                                                                                                                                                                                                                                                                           099
                                                                                                                                                                                                                                                                                                                                                                                                                      756
              à
                                   엄
                                                                 à
                                                                                        d
                                                                                                                  δ
                                                                                                                                             qq
                                                                                                                                                                           à
                                                                                                                                                                                              g
                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                   엄
                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                              Db
                                                                                                                                                                                                                                                                                                                                                                                         \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present sequence is the nucleotide sequence of human manganese superoxide dismutase (hSODm) cDNA. The CDNA was isolated from an adult human kidney cDNA library in landa-gtl0 using the probes given in ABNB4889-90. The invention relates to methods for hSODm gene cloning and expression in microorganisms, especially Escherichia coli or Saccharomyces cerevisiae. The hSODm cDNA is inserted into a vector for expression in the microbial host, preferably under conditions which allow for processing to remove the N-terminal methionine. The expression product is useful for treating a patient having inflammantory joint disease (e.g. osteoarthritis or rheumatoid archritis), or to minimise post-ischaemic tissue damage resulting from disease or surgery
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Preparing recombinant human manganese superoxide dismutase, useful in the treatment of osteoarthritis and rheumatoid arthritis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cadecadaaddacaddcirccccdacciracciracdacracdecdcciredaaaccrcacar
                                                   Superoxide dismutase; SOD; hSODm; enzyme; human; osteopathic; antirheumatic; antiarthritic; vasotropic; antiinflammatory; gene; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 849;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 849 BP; 256 A; 197 C; 227 G; 169 T; 0 U; 0 Other;
                                                                                                                                  1. .8
/hctag= a
/hotc= "EcoRI linker used in cloning"
1100. .768
/*tag= b
/product= "hSODm"
                                                                                                                                                                                                                                                                                             'note= "EcoRI linker used in cloning"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 197.8; DB 6;
Pred. No. 2e-49;
0; Mismatches 217;
                          Human manganese superoxide dismutase gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mullenbach GT;
                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Example 1; Fig 4; 16pp; English
                                                                                                                                                                                                                                                                                                                                                                             11-JUN-2001; 2001US-00878589
                                                                                                                                                                                                                                                                                                                                                                                                        86US-00918534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 60.9%;
Matches 366; Conservative
                                                                                                                                                                                                               100. .171
/*tag= c
172. .765
                                                                                                                                                                                                                                                      /*tag= d
842. .849
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bell GI,
                                                                                                                                                                                                                                                                                 /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2002-626527/67.
P-PSDB; ABB79798.
                                                                                                                                                                                                                                                                                                                                                                                                                                (CHIR ) CHIRON CORP.
                                                                                                                                                                                                                                                                                                                        US2002081287-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hallewell RA,
                                                                                            Homo sapiens
                                                                                                                                  misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                       14-0CT-1986;
                                                                                                                                                                                                                                                                    misc_feature
15-NOV-2002
                                                                                                                                                                                                                sig_peptide
                                                                                                                                                                                                                                          mat_peptide
                                                                                                                                                                                                                                                                                                                                                   27-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

CAACGCGCAGATCATGCAGCTGCACCACAGCAGCACCACGCGGCCTACGTGAACAACCT

qa S

```
488
                                                                                                                                                                                                                                                                                                                                                                                                                                575
   308
                                                                                                                                                                                                                                                                                                            515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          635
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA 599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         696 TIATCTAAAAGCTATTIGGAATGTAATCAACTIGGGAGAATGTAACTGAAAGATACATGGC 755
                                                      369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  636 GCTGGGGGATTGATGTGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA 695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               600 CTATCTCGCTGCTGTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC 659
405 GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                            456 AGCCATCAAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                         516 rerregrereceaegecreaegriegesriegerregerrearraagaaegegegeserr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       576 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGAAGTCACCACGACGCCAACCAGGACCCTCTGCTTACT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2004, 13:40:13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ļ
```

```
April 1, 2004, 12:35:05; Search time 2584.54 Seconds (without alignments) 11219.210 Million cell updates/sec
                                                                                                                                         US-09-727-855B-4
669
1 atgtctgttcgagcatccct......gattgcaggctgctcttaa 669
                                                                                                                                                                                                                                                                      6940544
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                          3470272 segs, 21671516995 residues
                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                         OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                 IDENTITY NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           em_htg_inv:*
em_htg_other:*
em_htg_qus:*
em_htg_pln:*
em_htg_pln:*
em_htg_mam:*
em_htg_mam:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           em_htgo_mus:*
em_htgo_other:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           em_htgo_hum:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               em_htg hum:*
                                                                                                                                                                                                                                                                                                  Minimum DB seq length: 0 Maximum DB seq length: 20000000000
                                                                                                                                                                                                                                                                                                                                                                                                              gb htg...
gb htg...
gb ov:...
gb ov:...
gb pl:...
gb pl:...
gb pl:...
gb ro...
gb ro...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            em_ph: *
em_pl: *
em_ro: *
em_ats: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    em_un:*
em_vi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  em_ba:*
em_fun:'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  em_ov:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     em_or:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       em om:
                                                                                                                                                                                                                                                                                                                                                                                                  GenEmbl:*
                                                                                                                                                                                                    Scoring table:
                                                                                                                                            Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                   Database :
                                                                                                                                                                                                                                             Searched:
                                                                                                                                                                         Sequence:
                                                                                       Run on:
```

Pred. No. is the number of results predicted by chance to have a

score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES	Description	9 AX128479	3 BD015713	1 AX128481	BD015/14	on (3 036403	E15568	E15569 C	AR2227	AF114848	AR22277	E155	1 AJ54	DRX Z18857 M.musculus	X04972 Mouse	BC0181/3 Mus	93 ABUUL693 Equus cab	K	A102/301	119436 Ri	AK104160 Oryza	AK104030	AK070528 Oryza	L34038	L34039 Or	AX401951	04 AKILYYU4 UIYZA BAL Or VOO497 Bat mBNA f	ď	AR106627		Y00472 H	67 BT006967	684 BT007684 Sy	E01408 CD	3 BC012423	0 AX33434	X07834 Hu	AR363929 Seque	AK097395	AB087277	7
SUM	DB ID		BD015	AX128	BD0157		_	6 E15568	F15569					Σ				4 AB001693	_									8 AK119904	. 4				М	ω	E0140	BC012				9 AK097395		9 AB0872
	ngth	699	699	597	597	678	704	728	010	812	621	630	629	750	779	897	836	954	1162	667	0 0 0	901	606	928	951	1352	1492	901	1450 813	813	829	829	699	699	813	940	1026	1026	1032	2555	009	009
•	* Query Match		100.0	47.3	47.3	43.9	38.7	37.7	. r	37.5	36.9	33.0	32.4	32.1	31.8	31.6	31.1	31.1	31.1	31.1) . () ()	30.0	30.8	30.8	30.8	30.8	30.6	30.6	φ. α	29.8	29.8	29.8	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.5	29.5
	OĽ	19	699	316.6	9	C4	258.8	252	4 0	250.6	246.6	220.6	216.8	214.8	213	211.4	208.2	208.2	ന	208	ີ່	206	206	206	206	206	N	204.4	ງອ	0	6	99	97.	97.	97.	9	97.	97.	97.	97.	σ	97.
	Result No.	1	73	ю	4	2	9	7	00	, E	11	12	13	14	15	16	17	18	19	220	22	4 6	40	25	26	27	28	29	الم 10 م	1 0	33	34	35	36	37	38	39	40	41	42	43	44

ALIGNMENTS

	: PAT 15-MAY-2001					rhodozyma)			lobasidiales;				rly astaxantnin
	linear					: Phaffia		nycetes;	; Cystofil				particulan
	669 bp DNA	Sequence 4 from Patent EP1111067.		I:14134946		Xanthophyllomyces dendrorhous (anamorph: Phaffia rhodozyma)	Xanthophyllomyces dendrorhous	Eukaryota; Fungi; Basidiomycota; Hymenomycetes;	Heterobasidiomycetes; Tremellomycetidae; Cystofilobasidiales;	Cystofilobasidiaceae; Xanthophyllomyces.		Hoshino, T., Ojima, K. and Setoguchi, Y.	Recombinant production of carotenoids, particularly astaxanthin
	AX128479	Sequence 4 fr	AX128479	AX128479.1 GI:14134946	•	Xanthophyllom	Xanthophyllom	Eukaryota; Fu	Heterobasidic	Cystofilobasi		Hoshino, T., C	Recombinant F
RESULT 1 AX128479	LOCUS	DEFINITION	ACCESSION	VERSION	KEYWORDS	SOURCE	ORGANISM				REFERENCE	AUTHORS	TITLE

27-AUG-2002

```
The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
                                                                                                                                                                                                                                                                                                       in particular, astaxanthin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TICCAGAICAGGGAAAGCAIACCCIGAGCIICCIIIACGCIIACGAIGCCCIGGAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Trccagarcaggggaaagcaraccrgccrgagcrrccrracgcrracgargccrrgag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CCTCCATCTCCAAGGAGATCATGACCTTCACCACCACCACCAGCATCAGACTTATGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AACGGCCTCAACGCTGCCGAGGAGAGCTACTCGCCGCTGTGGGCAAGGAGGATGTGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATGTCTGTTCGAGCATCCCTCTTCCGTGTCTAGACAGACTTTCGTCGCTCCTGCTGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Argreranceaechrecerenereneneaecherranceaecherenenen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAGACTTATGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACGGCCTCAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCAAGAAGGCTATCGAAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Cystofilobasidiales
                                                                                                                                                                  Phaffia rhodozyma
                                              BD015713 669 bp DNA linear PAT
Recombination production of carotenoids, in particular,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .669
/organism="Xanthophyllomyces dendrorhous"
/mol type="genomic DNA"
/db_xref="taxon:5421"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                      Eukaryota, Fungi, Basidiomycota, Hymenomycetes,
Heterobasidiomycetes, Tremellomycetidae, Cystof
Cystofilobasidiaceae, Xanthophyllomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%; Score 669; DB 6; L
100.0%; Pred. No. 5.3e-168;
ive 0; Mismatches 0;
                                                                                                                                      Location/Qualifiers (1). (669).
Location/Qualifiers
                                                                                                                            GI:22556850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     669; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            astaxanthin
                                                                                      astaxanthin.
                                                                                                                            BD015713.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                          VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                DEFINITION
                                                                                                                                                                                                                                                                             AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                      ACCESSION
          RESULT 2
BD015713
                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Op
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTCCAGATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ArdretricaAscarecerererererasiones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CCCTCCATCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAGAAGCTGGAAGTCACCACCACCCCAACCAGGACCCTCTGCTTACTCACATTCCTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ATGICTGITCGAGCATCCCTCTCTTCGTGTCTAGACAGACTTTCGTCGCTCCTGCTGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCTGACACCGCTGCCGAAGGATCCGGATGGGGCTGGCTTGGCTTGAACCCGCTTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCTGACACCGCTGCTGCCAAGGATCCGGATGGGGTGGCTTGGCTTGGCTTGACCTTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TATCTCGCTGCTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCCGATTGCAGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                         Length 669;
                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                            /organism="Xanthophyllomyces dendrorhous"
/mol_type="unassigned DNA"
/db_xref="taxon:5421"
1. -669
                                                                                                                                                                                                                                                                                                                                                                                       Score 669; DB 6; L
Pred. No. 5.3e-168;
0; Mismatches 0;
                                                                                                                                          1. .669
/note="unnamed protein product"
Patent: EP 1111067-A 4 27-JUN-2001;
F. HOFFMANN-LA ROCHE AG (CH)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                       100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                          .669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCTCTCTAA 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                             :699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661
                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                           Best Loca
Matches
  JOURNAL
                                                                                                                                    CDS
                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \dot{\delta}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

ó

Gaps

.,

699

09 9 120 180 180 240 240 300 300 360 360 420

420 480 480

421

Ы

Db 232 AAGAACATGGCTCCTGATGCCAAGCTCACGAGGGATCGCTCAAGACT 291 Oy 370 GCTATCGAGATCTTTTGGTTCTTTCAAGAAGAACTTCAACACTGACCC 429 Db 292 GCATCGACAAGAACTTTTGGATCTTTCGAGGCCTTCAAGAAGTTCAACACTGCTACT 429 Oy 430 GCTGCTGTCCAAGAACTTTGGATCCTTGAGCTTGAACCCGCTTACTAACACTGCTACT 351 Db 352 CTCGGTGTCCAAGAACTGGGGTTGGACTTGAACCCGCTTACTAAGAACTTC 411 Oy 490 GAAGTCACCAGGATCTGGATGGGGTTGGATCCAACACTACTACAAGACTTC 411 Db 412 GAAGTCACCACGACCAGAACCAGAACCCGTTACTCAACACTACTACATCGGAGTT 549 Oy 640 GAAGTCACCACCACCAGAACCAGAACCCTTATCATCATCATCATCATCATCATCATCATCATC	BD BD BD COLOR	AUTHORS AGENING, T., Ojima, K. and Setoguchi, Y. AUTHOR Recombination production of carotenoids, in particular, astaxanthin production of carotenoids, in particular, astaxanthin JOURNAL Patent: JP 2001190294-A \$ 17-JUL-2001; F HOFFMANN LA ROCHE AG CONMENT OS Phaffia rhodozyma OS Phaffia rhodozyma PP 01-DEC-2000 JP 2000367099 PR 01-DEC-1000 JP 2000367099 PR 01-DEC-1000 JP 2000367099 PR 01-DEC-1000 JP 2000367099 PR 01-DEC-2000 JP 2000367099 PR 01-DEC-2000 JP 2000367099 PR 01-DEC-2000 JP 2000367099 RR 01-DEC-1000 JP 2000367099 RR 01-DEC-1000 JP 2000367099 PR 01-DEC-1000 JP 2000367099 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-1000 JP 200036709 RR 01-DEC-100	astaxanthin FH Key (1)(597). FT CDS Location/Qualifiers 1537 /organism="Kanthophyllomyces dendrorhous" //mol_type="genomic DNA" /db_xref="taxon:5421"	Query Match 47.3%; Score 316.6; DB 6; Length 597; Best Local Similarity 72.0%; Pred. No. 16-73; 16-73; Matches 431; Conservative 0; Mismatches 159; Indels 9; Gaps 1; Qy 70 AGGSCAAAGCATACCTGCTGCTTACGATTACGATGCCTGGAGCCTTCCATC 129 Db 1 ATGCTCTTACACACTTCCTACGATTACGATGCCTTACATC 60 Qy 130 TCCAAGGAAATCATGACCTTCACACACCAACACCATCAGACTTAACGATCTTAACGGCTT 189 Qy 61 TCTAAGGAAATCATGATCATCACCACTCCAAGCACTTACGATCACACCACCAACCTC 120 Db 61 TCTAAGGAAATCATGATCCTTCACCACTCCAAGCACTAACGATCACCAACCTC 120
QY 481 AAGAAGCTGGAAAGTCACCACGACCACCAGGACCCTTACTCACATTCCTATC 540 Db 481 AAGAAGCTGGAAGCTCACCACGACCACGAGCCCTCTCTTACTCCTATCCTATCCTATCCTATCCTATCCTATCCTACTA	AX128481 597 bp DNA Sequence 6 from Patent EP1111067. AX128481 AX128481. AX128481.1 GI:14134948 AX128481.1 GI:14134948 Xanthophyllomyces dendrorhous (anamore Xanthophyllomyces dendrorhous Hymer Bukaryota; Fungi; Basidiomycota; Hymer Heterobasidiomycetes; Tremellomycetide Cystofilobasidiaceae; Xanthophyllomyce 1 1 Hoshino, T., Ojima, K. and Setoguchi, Y. Recombinant production of carotenoids; P. HOFFMANN-LA ROCHE AG (CH) F. HOFFMANN-LA ROCHE AG (CH) Location/Qualifiers	S	Query Match 47.3%; Score 316.6; DB 6; Length 597; Best Local Similarity 72.0%; Pred. No. 1e-73; Matches 431; Conservative 0; Mismatches 159; Indels 9; Gaps 1; And Agggrand Correct Garacter CTTACGCTTACGATGCCTCGAGCCTCCATC 129 Ov 70 Agggrand CATCTTACCGACCTTCCTTACGCTTACGAGCCTTCATC 129 Db 130 TCCAAGGAGATCATCACCACCTACGCTTACGATTATGTTACATC 60	Db 61 TCTAAGGAATCATCACCACTCCAAGCACCATCAGACTTACGTCACCAACCTC 120 Qy 190 AACGCTGCCGAGGACAACTCCGGCCGTGGGCAAGGAGGATGTCTTACCTCAGGT 249 Db 121 AACGCGCTATCCAGGCTTTCCCCAGACAAGGACAATCACAAGGACCCAGATC 171 Qy 250 AAGCTTCAGTCTGCTTCAACGGAGGAGGACAATCAACGTCAAACACTCTCTTCTGG 309 Db 172 GCTCTTCAGAGCTTCAAGTTCAACGGAGGACACATCAACACTCTCTTCTGG 231 Qy 310 AAGAACTTGGCTCCTCAAGTTCAACGGAGGACACATCAACCACTCCTTCTGG 231

1;

192 246 252 306 312 363 423 432 483 492 543 552

Db ò

ð

DP à g

δ

P P

δ qq g

ò d

ઠે

ò

```
GMU56403 704 bp mRNA linear PLN 04-SEP-1996
Ganoderma microsporum manganese-superoxide dismutase mRNA, complete
                                                                     67 ATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCC 126
                                                                                                                                         ATCTCCAAGGAGATCATGACCTTCACCACCAAGCACCATCAGACTTATGTTAACGGC 186
                                                                                                                                                                                                                                                                                                                                                                                GGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGACGTCAAGCCTGACTAT 603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGCATTGACATCTGGGAGCATGCTTTCTACCTTCAGTACAAGAACGTCAAGGCCCGATTAC 612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTCGCTGCTGTTTTGGTCCGTTATCAACTACAAGGAGGCAAAGGCCCCGATTGCAGGCTGCT 663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Fungi; Basidiomycota; Hymenomycetes; Homobasidiomycetes;
Aphyllophorales; Ganodermataceae; Ganoderma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Wang,H.-F.
Studies of Manganese-Superoxide Dismutase Gene of Ganoderma
Thesis (1996) National Taiwan University, Taipei, Taiwan, Republic
                                                                                                                                                                                                             CTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                           373 cárgaccacerccadecreacirriderecerridaaaaccricadaadeadareadarec
                                                                                                                                                                                                                                                                                   253 ATÍGCCCTTCAGCCCGCCCTCAAATTCAACGGTGGTGACATTAATCACTCTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAGCTGGAAGTCACCACGACGCGAACCAGGACCCTCTGCTTACTCACATTCCTATCATC
                                                                                                                                                                            Arcicitcigagaitaigaacciccarcacaccaagcarcacagactiaccitaacca
                                                                                                                                                                                                                                                citraacecreacidenterecreasaacecerenceserenciasaceriaaagecreer
                                                                                                                                                                                                                                                                                                                                                      TGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTA---CCCTCTCTGAAGGACCTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                          AAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GACACCGCTGCTGCCAAGGATCCGGATGGGGCTGGCTTGGCTTGAACCCGCTTACTAAG
                                                                                                      ATTAGGGCCAAGCACCCTTCCCCCTCTCCCTTATGCCTACGACGCGTTGGAGCCTTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAGCTCGAGATTGTCACCACTCCCAATCAGGACCCTCTCTTGTCCCACGTCCCTATCATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTCAACGCCATCTGGGACGTTATCAACTACGAGGAGCCGAGAACGGTCTGAAGGCTGCC
                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Wangy H. F. and Hseu, R.-S.

Bubmitted (24-APR-1996) Huei-Fang Wang, Applied Microbiology
Laboratory/Agricultural Chemistry Department, National Taiwan
University, Taipei, Taiwan, Republic of China
12 (bases Ito 704)
                                          ω
..
       Length 678;
                                      Indels
 Score 294; DB 8; L
Pred. No. 1.2e-67;
0; Mismatches 185;
 tch 43.9%;
al Similarity 69.0%;
418; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 microsporum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ganoderma microsporum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GI:1519035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTCTAA 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            U56403.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ganoderma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTGTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of China
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            U56403
                                                                                                                                                                                                                                                                                   247
                                                                                                                                                                                                                                                                                                                                                                                         313
                                                                                                      73
                                                                                                                                                                          133
                                                                                                                                                                                                                                                                                                                                                                                                                          364
Query Match
Best Local
Matches 41
 Match
                                                                                                                                         127
                                                                                                                                                                                                             187
                                                                                                                                                                                                                                                193
                                                                                                                                                                                                                                                                                                                                                      307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
GMU56403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOURCE
                                                                     ò
                                                                                                    d
                                                                                                                                       ò
                                                                                                                                                                     D
                                                                                                                                                                                                             à
                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                             \delta
                                                                                                                                                                                                                                                                                                                                                                                임
                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon_start=1
/product="MnSOp"
/product="MnSOp"
/product="AAQ9867.1"
/protein_id="AAQ9867.1"
/db_xref="G1:37694052"
/translation="MITAITRTALPRTTLRTSLATMSTIRAKHTLPPLPYAYDALBPS
ISSBIMNLHHTKHHQTYVNGLNNAAESLQKASAAGDVKAAIALQPALKFNGGGHINHS
ILFWKNLAPTGSAQVKVPTSGVFHDHYQADFGGGFBNLKKEMNAKTAAIQGSGMGWLGYN
KGTKKLEIUTTPPNQDPLLSHVPPIGIDIWEHAFYLQYKNVKPDYLNAIMDVINYEEAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PLN 21-OCT-2003
                  249
                                               171
                                                                                  309
                                                                                                                     231
                                                                                                                                               AAGAACTIGGCICCCTAIGGAICCGAGGAGGCIACCCICTCIGAAGGACCICTCAAGAAG 369
                                                                                                                                                                                           291
                                                                                                                                                                                                                             429
                                                                                                                                                                                                                                                489
                                                                                                                                                                                                                                                                                                                                                                     549
                                                                                                                                                                                                                                                                                                                                                                                                    471
                                                                                                                                                                                                                                                                                                                                                                                                                                GACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCT 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Tremellaceae;
                                                                                                                                                                                                                                                                                                                                  411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            531
         AACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTT
                                                 ------CCCAGATC
                                                                           GCTCTTCAGAGCGCTCTCAACGGAGGAGGACACATCAACCACTCCTTCTGG
                                                                                                                                                                            AAGAACATGGCTCCTGCCGACTCTGCTGATGCCAAGCTCACGAGGGATCGCTCAAGACT
                                                                                                                                                                                                                  GCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGAACGTTCAACGCTGACACC
                                                                                                                                                                                                                                                                                        CTCGGTGTCCAGGGATCTGGATGGGGTCGGATACAACACGCTACCAAGCACCTC
                                                                                                                                                                                                                                                                                                                                                                                         412 GAGATCGCCACCACCACCAGCAACCAGGATCCCCTTATCACTTTGACTCCCATCATTGGTCTT
                                                                                                                                                                                                                                                                                                                                                              GAAGTCACCACGACGCCAACCAGGACCCTCTGCTTACTCATTCCTATCGTATCGGAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                               472 GACATCTGGGAGGACGCTTTCTACCTCCAGTACAAGAATGTCAAGCCTGATTACCTTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    610 GCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGGGCCCGATTGCAGGCTGCTCTCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCTTTCTGGAACGTCTGCAACTTTGCTGAGGCTCAGCGAAGGTTTGATGCTGCTGTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gattii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cryptococcus bacillisporus (Filobasidiella bacillispora) Cryptococcus bacillisporus
Eukaryota; Fungi; Basidiomycota; Hymenomycetes;
Heterobasidiomycetes; Tremellomycetidae; Tremellales; Tr. Filobasidiella.

I (bases 1 to 678)
Narasipura, S.D., Chaturvedi, V. and Chaturvedi, S. Complete obna of MnSOD of Cryptococcus neoformans var. grupphlished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A linear complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Wadsworth Center,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Unpublished

(daseled 1. to 678)

Narasipura.S.D., Chaturvedi, V. and Chaturvedi, S. Direct Submission
Submitted (28-SEP-2003) Mycology, Wadsworth Cent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      bacillisporus"
                                          AACGCCGCTATCCAGGCTTTCTCCCAGACCAATGACATCAAGG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cryptococcus bacillisporus MnSOD mRNA, AY423629.1 GI:37694051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .678
/organism="Cryptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Scotland Ave, Albany, NY 12208,
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="mRNA"
/db_xref="taxon:37769"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'note="SOD2"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .678
                                                                                                                                                310
                                                                                                                                                                                                                                                       292
                                                                                                                                                                                                                                                                                                                           352
                                        121
                                                                                                                                                                                 232
                                                                                                                                                                                                                    370
                                                                                                                                                                                                                                                                                                                                                            490
                                                                                                                                                                                                                                                                                                                                                                                                                                  550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 5
AY423629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PEATURES
```

672

Location/Qualifiers

FEATURES

ORIGIN

Akiyama, K.

KATOU

Ы

ы

source

CDS

Best Loca Matches

į

11111

```
TCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGG 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rcaacececesasaadeceracecreaeceacecececeaaceacererraageaa 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAGA 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       248 ddaadaactigdccccccaagcaagcardgrggccaactgaacgardgccctctcaagc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    368 AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       308 AGGCCATCGAGCAGGAGTTCGGCGACTTTGAGAAGTTCAAGACGACCTTCAACACGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cecceccarchaederrcedecredecrerederragererreccece

    618 //product='Malassezia antigen protien MF-3'

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGAAGTCACCACGGCCAACCAAGGACCCTCTGCTTACTCACATTCCTATCGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAGACTTATGTTAACGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       188 TCCAGCTGCAGAGTGCGATCAACGCGGGTGGCCACATCACCACTGGTGGTGGCCACATCAACGCTGGTCGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TCAGGGCAAAGCATACCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCA
                                                                                                                                                                                                           IKUNOSHIN,

PI YASUBDA HIROSHI, AKIYAMA KAZUO, YAMAGUCHI HIDEYO PC
CO774/4/195,A61K39/35,C07H21/04,C07K7/08,C12N15/09,C12Q1/68, PC
GO1013/59;

PC GO1013/569;

CC strandedness: Double;

CC topology: Linear;

CC topology: Linear;

CC anti-sense: No;

FH Key

FT source

1. .728

FT FT SOURCE

1. .728

FT FT FT

CT COTAGINISM='Malassezia furfur' FT

FT FT

CT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT

FT COTAGINISM='Malassezia furfur' FT
      Takesako,K., Daimon,H., Kuroda,M., Katou,I., Yasueda,H., and Yamaguchi,H.
and Yamaguchi,H.
RECOMBINANT MALASSEZIA ANTIGENIC PROTEIN AND ITS GENE PACENT: JP 199807296-A 3 24-MAR-1998;
TAKARA SHUZO CO LTD
OS Malassezia furfur
N JP 1998077296-A/3
PD 24-MAR-1998
PP 05-SEP-1996 JP 1996257613
PI TAKESAKO KAZUTADA, DAIMON HISASHI, KURODA MASANOBU,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         37.7%; Score 252; DB 6; Length 728; 65.5%; Pred. No. 2e-56; ive 0; Mismatches 200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /clone='pMF3-1'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1. .728
/organism="unidentified"
/mol_type="genomic DNA"
/db_xref="taxon:32644"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /strain='TIMM2782'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 385; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                     TITLE
JOURNAL
REFERENCE
                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                   COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                      /codon start=1
/product="manganese-superoxide dismutase"
/product="manganese-superoxide dismutase"
/protein_id="AAB07360.1"
/db xref="fd1:1519036"
/trānslation="MAHVLPDLPYAYNALEPFISQOIMELHHKKHHOTYVNSLNAAEQ
AYAKASTPKERALQSALKFNGGGHINBSLFWKNLAPARSECKGNGGALADGPLKSAI
BQNWGSVDNFIKEPRATQSALATQSGSGWGWLGIAPATKRLIBITTTANQDPLLSHVPIIGY
DIWEHAFYLQYLNVKADYLAAIWIVINFKEABRRLIBATK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAT 28-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                   7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Acrecieccarceaedericaderidderiddericddacrraaceddaadaar 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     credagaraacoacedecaarcaddacedecrecrecredaroredearcareac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTEGAAGTCACCACGACGCCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATCATGACCCTTCACCACACCACCACCATCAGACTTATGTTAACGGCCTCAACGCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TCTGCGATCGAGCAGAACTGGGGGCTCCGTCGACACTTCATCAAGGAGTTCAACGCCACC
                                                                                                                                                                                                                                                                                                                                                                                                                                          CATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cacercercecedaceredegradeseracesecresaseseceresaseses
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100 ATCATGGAGCTCCACCACAAGAAGCACCACCAGACCTACGTCAACTGGCTCAACGCCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAAGCTTCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----CTCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ---GAGGCTACCCTCTGAAGGACCTCTCAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           367 AAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGAC
                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                 21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCCAGAGGCCCCGATTG 654
                                                                                                                                                                                                                                                                                                                                                            Length 704;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCGGCGATCTGGATCGTGATCAACTTCAAGGAGGCGAGCGTCGTCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      linear
                                                                                                                                                                                                                                                                                                                                                          38.7%; Score 258.8; DB 8; Length ilarity 68.0%; Pred. No. 3.1e-58; Conservative .0; Mismatches 167; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            160 dadcaddetraceceaaddeteceaececeaaddagececaiedd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          алээьв
cDNA encoding Malassezia antigen protein MF-3.
E15568
                          organism="Ganoderma microsporum"
                                                                                'db_xref="taxon:34462"
                                                                                                       34. ...636
/EC_number="1.15.1.1"
                                                             'strain="RSH 0821"
                                           mol_type="mRNA"
                                                                                                                                              'note="Mn-SOD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCTCCCTATGGATCCGAG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E15568.1 GI:5710251
JP 1998077296-A/3.
unidentified
                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
hes 400; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                              79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     40
                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 7
E15568
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
```

원 ð 용 ð g à d à 셤

Db

CD à g δ

ð

ä

Gaps

.. M

187

67

307 427 367 487 424 547 484 607

548 TIGACAICIGGGAGCACGCTITCIACCTICAGIACAAGAACGICAAGCCTGACTAICICG

ð

unidentified unclassified

ð g à g

g

임 ð

```
PAT: 28-JUL-1999
                                                                                                                                                                                    1 (bases 1 to 812)
Takesako,K., Daimon,H., Kuroda,M., Katou,I., Yasueda,H., Akiyama,K.
and Yamaguchi,H.
ECOMBINANT MALASSEZIA ANTIGENIC PROTEIN AND ITS GENE
Patent: JP 1998077296-A 4 24-MAR-1998;
                                                                                                                                                                                                                                                                                                                                                                       KATOU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ccaagracacectectecteracearracectectectecaecececteaececeaecarcaece 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ccecedadeacaacrearceacecercecaecaecaececerreeceaerreee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        252 AGCTGAACGCGATCAAGTTCAACGCGGTGGCCACATCAACCACTCGCTCTTCTGGAAGA 311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             314 ACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICICIGAAGGACCICICAAGAAGGCIA 373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      372 rcsacceceacrificacricacricarcaccicaricaaggagaagricaacgcegecerceces 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         product='Malassezia antigen protein MF-4'.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             134 AGGAGAȚCATGACCTTCACCACCACCATCAGACTTATGTTAACGGCCTCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                132 GCGAGATCATGGAGACGCACTACGAGAAGCACCACCACCTACGTCAACAACCTGAACG
                                                                                                                                                                                                                                                                                                                                                                                                                         \mathcal{P}_{\mathcal{C}}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      74 CAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACCGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                       Ы
                                                                                                                                                                                                                                                                                                                                                                                                     YASUEDA HIROSHI, AKIYAMA KAZUO, YAMAGUCHI HIDEYO PC
4/195,A61K39/35,C07H21/04,C07K7/08,C12N15/09,C12Q1/68,
                                                                                                                                                                                                                                                                                          Malassezia furfur
JP 1998077226-A/4
24-MAR-1998
05-SEP-1996 JP 1996257613
TAKESAKO KAZUTADA, DAIMON HISASHI, KURODA MASANOBU,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       812;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      拞
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism='Malassezia furfur'
                                              linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                            69 BNA lin
encoding Malassezia antigen protein MF-4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 250.6; DB 6;
Pred. No. 4.9e-56;
); Mismatches 214;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone='pMF4-4'
2. .673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1. .812
/organism="unidentified"
/mol_type="genomic DNA"
/db_xref="taxon:32644"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           strandedness: Double;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ·
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              topology: Linear;
hypothetical: No;
anti-sense: No;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /strain='TIMM2782'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     37.5%;
63.9%;
                                                                                              E15569.1 GI:5710252
                                                                                                                 JP 1998077296-A/4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                         G01N33/569;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mat peptide
                                                                                                                                  unidentified
                                                                                                                                                   unidentified
                                                                                                                                                                   unclassified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                   PI YASUE
C07KL4/199
C00N33/53,
PC G01N33/53,
CC Btran
CC topol
CC hypol
CC hypol
CC hypol
FH Key
FH FH
                                                                                                                                                                                                                                                                                                                                                                                    IKUNOSHIN
                                                                              15569
                                                               CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 379;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  374
                                          LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                  SOURCE
ORGANISM
                                                                                                                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                              COMMENT
                          E15569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                 PAT 26-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ij
485 GGGATGGCTGGGAGCACGCCTGGTACCTGCAGTACAAGAACGACAAGGCTTCCTACCTTA 544
                                                                                                                                                                                                                                                                                                      1 (bases 1 to 728)
Takesako, K., Okado, T., Yagihara, T., Kuroda, M., Onishi, Y., Kato, I., Akyama, K., Yasueda, H. and Yamaguchi, H.
Antigenic protein originating in malassezia
Patent: US 6432407-A 13-AUG-2002;
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCAGGGCAAAGCATACCCTGCCTGAGGTTCCTTACGCTTACGATGCCCTGGAGCCCTCCA 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCC 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               68 ICTCTAAGGAGATCATGACGGTCCACGACAAGCACACCACCAGACCTACGTGAACAACC 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGG 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               248 GGAAGAACCTGGCCCCCCAGAGCGAGGTGGTGGCCAACTGAACGATGGCCCTCTCAAGC 307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGGCCATCGAGCAGGAGTTCGGCGACTTTGAGAAGTTCAAGACGACCTTCAACACGAAGG 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGAAGTCACCACGACCGCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAG 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rchaceccecceadadeceracerdaeccacececanceacerecrateraceae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               485 GGGATGGCTGGGAGCACCTGGTACCTGCAGTACAAGAACGACAAGGCTTCCTACCTTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8 TCATGACTAAGTACACTCTCCCTCCTCGCCCTACGCCTACGCCTGGAGCCGTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rdaaccigerderreccaaggaccadeaccecrcacgacacccccccccrcardecr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   548 TTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ccgcrqcraccaaggarccqqarqqqqcrrqqcrrqaacccqcrracraagaagc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cedecedecariceadariceadaridacrerareacricearerrecedes---aceacaacc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3;
                                        655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        608 CIGCIGITIGGICCGITAICAACIACAAGAGGCAGAGGCCCGAIIGC 655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            545 AGGCCTGGTGGAACGTGGTGAACTGGGCCGAGGCCGAGAAGCGCTTCC 592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 37.7%; Score 252; DB 6; Length 728; Best Local Similarity 65.5%; Pred. No. 2e-56; Matches 385; Conservative 0; Mismatches 200; Indels
                                                         545 AGGCCTGGTGGAACGTGGTGAACTGGGCCGAGGCCGAGAAGCGCTTCC
                                 608 CIGCIGITIGGICCGITAICAACTACAAGGAGGCAGAGGCCCGGATTGC
                                                                                                                                                                 linear
                                                                                                                                                                 mRNA
                                                                                                                                                      728 bp
Sequence 5 from patent US 6432407.
AR222757.1 GI:23330439
                                                                                                                                                                                                                                                                                                                                                                                                                                  organism="unknown"
                                                                                                                                                                                                                                                                                                                                                                                                                                                 /mol_type="mRNA"
                                                                                                                                                                                                                                                                                     Unclassified.
                                                                                                                                                                                                                                                  Unknown,
                                                                                                                                                                                                                                                                      Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                488
                                                                                                                                                          LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
FEATURES
                                                                                                                                                                                             ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
                                                                                                                         RESULT 8
AR222757
                                                                                                                                                                                                                                 KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
```

d à g à q ઠે qq δ g ò gg ò 셤

g ò

δ DP à

TATCTCG TACTTCA TACTTCA SCTCTC GCGCTC	LOCUS AF114848 AF114848 DEFINITION Paxillus involutus manganese-superoxide dismutase precursor (MnSOD) ACCESSION AF114848.1 GI:4585262 KERYORDS SOURCE PAXILUS involutus ORGANISM PAXILUS involutus BOLetales; Paxillus involutus BOLetales; Paxillus involutus BOLetales; Paxillus involutus Locatilus involutus BOLetales; Paxillus involutus ARPERENCE Locatilus involutus Locatilus involutus ARPERENCE ARPERENCE AREA (AMBODASIGIOMYCOTA) AREA (AMBODASIGIOMYCOTES) AREA (AMBODASIGIOMYCOTES)	acob, C., loning an uperoxide axillus i npublishe acob, C., irect Sub ubmitted andoeuvre i	Strain="Anc. 2001/5" Ab_xref="ATC: 2001/5" Ab_xref="taxon:71150" Gbs 1	/coduct="manganese-superoxide dismutase precursor" /product="manganese-superoxide dismutase precursor" /protein_id="AAD25353.1" /db_xref="G1:4585263".1" /db_xref="G1:45852	ORIGIN Query Match Query Match Best Local Similarity 66.0%; Pred. No. 5.6e-55; Matches 398; Conservative 0; Mismatches 184; Indels 21; Gaps 2; Qy 77 AGCATACCTGCTGAGCTTACCATTACCATACCATGAGCCCTCCATCTCAAGG 136	Db 11 AACACATCICCCGACTCCTATGATGCTCTGAGCCTTACGTCTCGAGC 70 Qy 137 AGATCATGACCCTCACACACACACACACACACATTAACGGCCTCAACGCTG 196 Db 71 AGATCATGACGCTTCACCACAAGAACCTATGTTAACGGCCTCAACGCTG 130 Qy 197 CCGAGGAGACACACAAGAACCTATGTTAACGGCTCTCAACGCCG 130 Db 71 AGATCATCACCGCCGTGGGCAAGGAGGATGTCTTACCCAGGTTAAGCTTC 256 Qy 197 CCGAGGAGAACACACACACAAGAAGGAGGATGCTTACCCAGGTTAAGCTTC 256 Db 131 CTGAAGTTACGCGAAGACTGCTCCCCAAGGAGCGCATCGCCCTCC 181 Qy 257 AGTCTGCTCTCAAGTTCAACGGAGGAGCACAACAATCAAT
Qy 434 CTGTCCAAGGATCCGGATGGCTTGGCTTGAACCCGCTTACTAAGAAGCTGGAAG 493 Db 432 GCATCCAGGCTGGGCTGGGCTGGGCTGACCCCACGACGCAGAAGCTCGACA 491 Qy 494 TCACCACGACCGCCAACCAGGACCCTTACTCACATTCCTACTCACGATGACA 553 Db 492 TCATCACGACGCGAACCAGGACCCGCTCCTTACTCGCACAAGCCGCTGATTGGCATCGATG 551 Qy 554 TCTGGGAGCACGCTTTCTACTTCAGTACAAGAACGTCAAGCCTGACTGCTGCTGCTGCTGCTGTGTG 613 Db 552 CGTGGGAGCACGCTTCTACCTTCAGTACAAGAACGTCAAGGCCTGACTTCTGCTGCTGTGTG 613 Db 552 CGTGGGAGCACGCTTCTACCTTCAGTACAAGAACGTCAAGGCCTGACTACTTCAAGGCGA 611	OY 614 TTTGGTCGTTATCAACTACAAGAAGGCCGATTGCAGCTGCTCT 666	φ , χω ο , κο	Query Match 37.5%; Score 250.6; DB 6; Length 812; Best Local Similarity 63.9%; Pred. No. 4.9e-56; Matches 379; Conservative 0; Mismatches 214; Indels 0; Gaps 0; Qy 74 CAAAGCAACCTGAGCTTCCTTAGGCTTACGATGCCTGGAGCCCTCCATCTCA 133 Db 72 CCAAGTACAGGCTGCGCCGTAGGACTACGGCGCGCTGGAGCCGGGGGATCTCGG 131	QY 134 AGGAGATCATGACCACCACCACCATCAGACTTATGTTAACGGCCTCAACG 193 Db 132 GCGAGATCATGGAGACGCACTACGAGAAGCACCACCTACGTCAACAACCTGAACG 191 QY 194 CTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGAGGAGGATCTCCCAGGTTAAGC 253 Db 192 CCGCGAGGAGAACTGATCGACGCCTCCCCGAGGAGGAGCCCGCTCGGCGAGGAATTGCGC 251	254 TTCAGTCTGCTCTCAAGTTCAACGGAGGACACATCAATCA	Db 312 ACCTCGCGCCGACGACGAGCGGCGGCGCGCGCGCGCGCGC

657

ò

 δ Dp ð g à g ઠે d ð 셤

```
PAT 28-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 (bases 1 to 629)
Takesako, K., Daimon, H., Kuroda, M., Katou, I., Yasueda, H., Akiyama, K.
and Yamaguchi, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KATOU
    361 ACGCAGAAGCTCGACATCATCACGACCGCGAACCAGGACCCGCTCCTCGTCGCACCAGCCG 420
                                                                                                                                                                         538 AICAICGGAGTIGACAICIGGGAGCACGCTITCIACCIITCAGIACAAAAAAAGCTTAAGAA
                                                                                                                                                                                                                                                           177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                      421 CTGATTGGCATCGATGCGTGGGAGCACGCTACTACTGCAGTACAGAACGTCAAGGCC
                                                                              ACTAAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCT
                                                                                                                                                                                                                                      GACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAGCCCTCCATCTCCAAGGAGATCATGACCTTCACCACACCAAGCACCATCAGACTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 GAACCTGCTTTCTGGGGGGGGGAGATGGAGACGCACTACGAGAGGACCACCACCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ΡI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PI YASUBDA HIROSHI, AKIYAMA KAZUO, YAMAGUCHI HIDEYO PC
CO7KL4/195,A61K39/35,C07H21/04,C07K7/08,C12N15/09,C12Q1/68,
G0IN33/53,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Malassezia furfur
UP 1988077256-A/20
24-MAR-1998
05-SEP-1996 UP 1996257613
TAKESAKO KAZUTADA, DAIMON HISASHI, KURODA MASANOBU,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 629;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RECOMBINANT MALASSEZIA ANTIGENIC PROTEIN AND ITS GENE
Patent: JP 1998077296-A 20 24-MAR-1998;
TAKARA SHUZO CO LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ĿН
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               furfur,
                                                                                                                                                                                                                                                                                                                                                                                                             linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                            E15585 629 bp DNA lin CDNA encoding Malassezia antigen protein MF-4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               organism='Malassezia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 216.8; DB 6;
Pred. No. 5.3e-47;
0; Mismatches 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
1. 629
/ Organism="unidentified"
//mol_type="genomic DNA"
/db_xref="taxon:32644"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     G01N33/569;
strandedness: Double;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   topology: Linear;
hypothetical: No;
anti-sense: No;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /strain='TIMM2782'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   32.4%;
ilarity 62.9%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                       E15585.1 GI:5710268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JP 1998077296-A/20
                                                                                                                                                                                                                                                                                                   GCTGCTCTC 666
                                                                                                                                                                                                                                                                                                                              dAGGCGCTC 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      unidentified
unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    unclassified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity
Matches 335; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IKUNOSHIN
                                                                                                                                                                                                                                                                                                                                                                                                                                          E15585
                                                                                                                                                                                                                                                                                                 658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SS M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      418
                                                                                                               478
                                                                                                                                                                                                                                      598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               118
                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                               13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                       VERSION
                                                                                                                                                                                                                                                                                                                                                                             RESULT
E15585
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                          LOCUS
                                                 ò
                                                                             g
                                                                                                                                     qq
                                                                                                                                                                                                                                                                 g
                                                                                                               ઠ
                                                                                                                                                                         \delta
                                                                                                                                                                                                       d
                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PAT 26-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                               424
                                                                301
                                                                                                                            361
                                                                                                                                                    425 ACACCGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGGCTTGAACCCGCTTACTAAGA 484
                                                                                                                                                                                                                       544
                                                                                                                                                                                                                                    1 (bases 1 to 630)
Takesako, K., Okado, T., Yagihara, T., Kuroda, M., Onishi, Y., Kato, I.,
Akiyama, K., Yasueda, H. and Yamaguchi, H.
Antigenic protein originating in malassezia
Patent: US 6432407-A 29 13-AUG-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                          362 CTACTGCTGCCATCCAGGGCTCTGGCTGGGCTGGCTGGATTGAACCCCTCGACCAAAC 421
                                                                                                                                                                                                                                                                                 604
                                                                                                                                                                                                                                                                                                                541
                                                                                                                                                                                                                                                                                                                                             664
                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAGCCCTCCATCTCCAAGGAGATCATGACCTTCACCACACCAAGGACCATCAGACTTAT 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     358 CCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTC 417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
AAGCTGCCCTCCGCTTCAACGGTGGTGGTCATATCAACCACTCCCTCTTCTGGAAGAACC
                                 AGGAGGCTACCCTCTGAAGGACCTCTCA
                                                                                                                       302 AGGÁTGCCATCGACTCGAACTTTGGCTCGATAGCCTCAAGAAGAATTCAATGCTG
                                                                                                                                                                                                               485 AGCTGGAAGTCACCACGACGGCCAACCAGGACCCTCTGCTTACTCATCATCATCG
                                                                                                                                                                                                                                                                                                                                          TCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTC
                                                         365 AGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTG
                                                                                                                                                                                                                                                                             GAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATC
                                                                                                                                                                                                                                                                                                 GIGHCGATATCTGGGAGCACGCTTTCTACCTCCAATACCTCCAACGTCGATGATTACC
                                                                                                                                                                                                                                                                                                                                                                       542 TCAACGCAATCTGGAGCGTTATCAACTTCAAGGAGGCTGAGAAGAGGTTCACTGAGGGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 daaccrecrrrcregegegegegaararegaacecacraceagaagcaccaccaccaccac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.78 GITAACGGCCTCAACGCTGCCGAGGAGAGAGTACTCGGCCGCTGTGGGCAAGGAGGATGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              crceccadarrececaecreaacecearcaanrecareeeceaeceacacae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTCAACAACTGAACGCCGCGGGGGGACAAGCTGATCGACGCGCTCCCGCAGCAGAGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TCTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 220.6; DB 6;
Pred. No. 5.1e-48;
0; Mismatches 206;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                630 bp
Sequence 29 from patent US 6432407.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1. .630
/organism="unknown"
/mol_type="mRNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GI:23330457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity 62.5%;
Matches 343; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Unknown.
Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AR222775.1
                                                                                                                                                                                                                                                                                                                                                                                                    TCT 667
                                                                                                                                                                                                                                                                                                                                                                                                                                  TCT 604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Unknown
                                                           242
 182
                                                                                                                                                                                                                                                422
                                                                                                                                                                                                                                                                             545
                                                                                                                                                                                                                                                                                                          482
                                                                                                                                                                                                                                                                                                                                          605
                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                  602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1.21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AR222775
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
                                                        dd
                                                                                     à
                                                                                                                g
```

엄 ò

à d ò qq ð g à

ó,

d à g d

ò

dd

à

qq δ d à g ð g

 δ

```
N 218857.1 GI:288504

manganese superoxide dismutase.

Mus musculus (house mouse)

HISM Mus musculus (house mouse)

HISM Mus musculus (house mouse)

Rikaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.

CE 1 (bases 1 to 779)

RS Hallewell, R.A., Mullenbach, G.T., Stempien, M.M. and Bell, G.I.

Sequence of a cDNA coding for mouse manganese superoxide dismutase

Nucleic Acids Res. 14 (23), 9539 (1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     bp mRNA linear superoxide dismutase.
                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                   Score 214.8; DB 8;
Pred. No. 1.8e-46;
0; Mismatches 237;
                                                                                                                                                                                                                                           32.1%;
60.7%;
                                                                                                                                                                                                                                                                                                                   Matches 370; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGGAGGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      656 AGGCTGCTCT
                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MMNSODRX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 416
                                                                                                                                                                                                                                                                                                                                                                                           26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               152
                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 15
MMNSODRX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VERSION
KEYWORDS
SOURCE
                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Direct Submission
Submitted (25-FBB-2003) Andersson A., Department of Medicine,
Karolinska hospital, Unit of Clinical Allergy Research L2:04, 17176
Stockholm, SWEDEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     04-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                     417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AACGCIGACACCGCIGCIGCCAAGGAICCGGAIGGGCIGGCCIIGGCCIIGAACCCGGCTT 477
237
                                                                    120
                                                                                                                                            297
                                                                                                                                                                                                            TCTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGA 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Andersson, A., Rasool, O., Schmidt, M., Kodzius, R., Crameri, R. and Scheynius, A.
Cloning, expression and characterisation of two new IgE binding proteins in the yeast Malassezia sympodialis with sequence similarities to heat shock proteins and manganese superoxide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               538 ATCATCGGAGTIGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421 crearrescarcearsesreses de de caractacer de caractaca de la crear de caractaca de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de 
                                                                                                                                                                                                                                                                                                                                                                                                                                 CCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241 GAGCTGCGCTCCGCGATCGACCGCGACTTTGGCTCGGTCGACGCCATGAAGGAGGAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTAAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCT
GTTAACGGCCTCAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTG
                                                                                                                                                                                                                                                                                                                                                             181 regererrerada da de crecece de acesa estas de consecuencios de consecuencios de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecuencies de consecu
                                                                    750 bp mRNA linear PLN 04-M Malassezia sympodialis partial mRNA for manganese superoxide dismutase (MnSOD gene).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GACTACTTCAAGGCGATCTGGACCGTGATCAACTTTGAGGAGGCCGAGAAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ustilaginomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="manganese superoxide dismutase"
/protein_id="CAD68071.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AJ548421

AJ548421.

AJ548421.

AJ548421.

G. 1:28568697

Malassezia sympodialis

Malassezia sympodialis

Balassezia sympodialis

Eukaryota; Fungi, Basidiomycota; Ustilaginomyce

Exobasidiomycetidae; Malasseziales; Malassezia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sympodialis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   evidence=experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .750
/organism="Malassezia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       xref="taxon:76777"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mol_type="mRNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "gene="MnSOD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "dene="MnSOD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Unpublished
2 (bases 1 to 750)
Andersson,A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           <del>Q</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      598
                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                            358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         478
           178
                                                                           61
                                                                                                                                                   238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 14
MSY548421
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
```

```
/db_xref="G1:28569698"
/translation="PRYPIBSALPPPLPHSLESRRTRLFRESRTAARAGTEHTLPPL
PYSTVALEPETSADIMMVHHGKHQTYVNNINASTKAYNDAVQAQDVLKQMELLTAVK
PYGGHVNHALPWRTMAPQSQGGQLNDGPLKQAIDKEFGDFEKFKAAFTAKALGIQS
SGWCWLGLSKTGSLDLVVAKDQPTLTTHHPIIGWDGWEHAWYLQYKNDKASYLKQWWN
VVNWGEAESRYSEGLKASL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ROD 17-FEB-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       331
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        212 Archgaacaacchgaacgcgrccacgaaggcchacaacgacgcaghccaggcrcaggag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACTOTOTOTOTOGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         509 agaccegecaectregaectregregregicaaggacaagaacaacaacaacaacaacac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 crrceraccreaaecaereeredaacerrereaacreeaeceaecereaecraccr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGCTTACCCAGGTTAAGCTTCAGTCTGCTCTCAAGTTCAACGGAGGAGGACACATCAATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       272 recreasecadaredaderecreacederereadricaaredregeregeerecraace
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTATCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         332 Acechchchringsaadaccandechcchcaadaccaddenderdecadcinaacdacd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               392 GCCCCCCCAAGCAGGCCATTGACAAGGAATTTGGCGACTTTGAGAAGTTCAAGGCCGCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      452 reacgecenaggecerrecentecagecrereseries recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes recipientes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          476 TTACTAAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ceeccececedeagatacadacacacinationes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTGCTTTCCAGATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  116 TGGAGCCCTCCATCTCCAAGGAGATCATGACCTTCACCACCACCAAGCACCATCAGACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rreadecerricarricegereararearearearecaceacegraageaceareaecer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ..
G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        750;
```

```
/trānslation="MLCRAGCSTGRRLGPVAGAAGSRHKHSLPDLPYDVGALEPHINA
MDQLHHSRHAAYNNLANPEBKYHBALAKODYTQVALQPALKFNGGAHINHTIFW
TNLSPKGGGEPKGELLEAIKBPGSFEKFKEKLTAVSVGVGGSWGWLGFNKEGRLQ
IAACSNQDPLGGTTGLIPLLGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENYTERYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Loases 1 to 779)
Sun,Y., Hegamyer,G. and Colburn,N.H.
Sequence of manganese superoxide dismutase-encoding cDNAs from multiple mouse organs
Gene 131 (2), 301-302 (1993)
                                                                                                                                                                                                               CAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           281 CGCTCTTCAGCCTGCACTGAAGTTCAATGGTGGGGGACATATTAATCACACCATTTTCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      101 ccescacaaccacaccaccacaccacaccataccacacatarescencescacata
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TAACGCGCAGATCATGCAGCTGCACCACGCAAGCACCATGCGGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAACGCCACCGAGGAGAAGTACCACGAGGCTCTGGCCAAGGGAGATGTTACAACTCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             341 GACAAACCIGAGCCCTAAGGGTGGTGGAGAACCTA-----AAGGAGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                             m
                                                                                                                                                         Direct Submission
Submitted (25-NOV-1992) Sun Y., FCRDC, CBS, LVG, P.O. Box
Frederick, MD, 21702-1201
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 779;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 213; DB 10; Length 7. Pred. No. 5.6e-46; 0; Mismatches 195; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   product="manganses superoxide dismutase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /citation=[1]
/replace="a"
729 730
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88. .89
/citation=[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /citation=[1]
/replace="g"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'replace="tg'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 63.3%;
Matches 368; Conservative
                                                                                                                                  (bases 1 to 779)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36. .107
108. .701
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACKK"
                                                                                                                  8406027
                                                                                                                                             Sun, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sig_peptide
mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              conflict
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        conflict
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               conflict
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  221
                                                                                                                                                                                                                     source
                             REFERENCE
AUTHORS
TITLE
                                                                                    JOURNAL
MEDLINE
PUBMED
REFERENCE
                                                                                                                                                                         JOURNAL
                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                                                                  FEATURES
                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
```

```
539
429 CGCTGCTGCTAAGGATCCGGATGGGGCTGGCTTGGACCCGCTTACTAAGAAGCT 488
                                         511
                                                                                                                                                    540 CATCGGAGTIGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA 599
                                                                                                                                                                                              631
                               452 TGTGGGAGTCCAAGGTTCAGGCTGGGCTGGCTTGGCTTCAATAAGGAGCAAGGTCGCTT
                                                                                                       572 GCTGGGGATTGACGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAACGTCAGACCTGA
                                                                               --TTACTCACATTCCTAT
                                                                                                                                                                                                                                600 CTATCTCGCTGCTTTTGGTCCGTTATCAACTACAAGGAGG 640
                                                                                                                                                                                                                                                                   632 charcreaaaccrarrregaareraarcaacreggagaare 672
                                                                           489 GGAAGTCACCACGACGCCAACCAGGACCCTCTGC---
                                 рp
                                                                                                         g
                                                                                                                                                                                      g
                                                                         à
                                                                                                                                                  à
 ò
                                                                                                                                                                                                                                ð
```

Search completed: April 1, 2004, 18:48:00 Job time : 2590.54 secs

```
CF638868 D08 A03 F
CF644174 K17 G06 F
CF643783 K12 E10 F
CF643817 K13 A05 F
                                                                                                                                                    April 1, 2004, 13:12:34 ; Search time 1718 Seconds (without alignments) 11628.541 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                   699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Description
                                                                                                                                                                                                                                                                                                                   1 atgtctgttcgagcatccct.....gattgcaggctgctctctaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      55026578
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     27513289 segs, 14931090276 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CF638868
CF644174
CF643783
CF643817
                                                                                                        sw model
                                                                                                                                                                                                                                                                                                                                                                     IDENTITY NUC Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                em estba:*
em_esthum:*
em_esthum:*
em_esthun:*
em_estro:*
em_estro:*
em_estro:*
em_estro:*
em_estro:*
em_estro:*
gb_est::*
gb_est::*
gb_est::*
gb_est::*
em_gsest::*
                                                                                                      nucleic search, using
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-727-855B-4
669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 754
656
662
702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ESI: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42.7
42.5
42.5
42.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 285.8
284.4
284.4
284.4
                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                             ı
                                                                                                           OM nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Result
No.
                                                                                                                                                               Run on:
```

5 267 39.9 617 14 CF643663 6 266.4 38.9 76 14 CA765001 8 215.6 32.2 666 14 CD271903 9 215.4 32.2 76 14 CD489102 10 212.4 31.7 619 14 CF643568 11 212.2 31.7 619 14 CF643518 12 210.6 31.5 796 14 CF643518 13 210.6 31.5 796 14 CF643518 14 210.4 31.7 619 14 CF643518 15 20.6 31.3 7 619 14 CF643518 16 20.6 31.3 76 14 CF643611 15 20.6 31.3 76 14 CF643611 16 20.6 31.3 76 14 CF643611 17 20.6 31.3 76 14 CF643611 18 20.8 31.1 749 14 CF643611 20 20 2 31.1 749 14 CF643611 20 20 2 31.1 825 14 CF64361 20 20 2 31.1 825 14 CF64618 20 20 2 31.1 1001 13 BY702057 21 20 2 31.1 1001 13 BY702057 22 20 2 31.1 1001 13 BY702057 23 20 2 31.1 1001 13 BY702057 24 20 2 31.1 1001 13 BY702057 26 30 30 8 73 14 CF66618 27 20 2 30 30 8 826 14 CF66618 20 20 2 31.1 1111 11 11 AR002534 20 20 2 31.1 1001 13 BY702057 20 20 3 30 8 826 14 CF66618 20 20 2 31.1 1001 13 BY702057 20 20 30 8 826 14 CF66618 20 20 30 8 73 14 CF66618 20 20 30 8 826 14 CF66618 20 20	CA765001 AF53-RPF CD499102 T18_F10 T CD271903 T143A0136 CF472965 RTDS1_12 CF472965 RTDS1_12 CF643589 AGENCOURT BU066841 F9T-C_1 K CD488011 T03 D94_T7 AT002967 AT002967 CD272097 T143A0126 BG970432 60298655 CA321590 UI-M-EXO-BH1406465 CD488013 60298655 CD467777 LeukoS1_6 B1412406 60298655 CD467777 LeukoS1_6 B1412406 60298655 CD467777 LeukoS1_6 B1412466 60298655 CD467777 LeukoS1_6 B1412466 602987995 CD47077 LeukoS1_6 B1412466 CD298675 CD490104 BY703048 BY702957 BY702957 BY702957 BY703048 BY702957 BY703048 BY702957 BY703048 CD590304 BY703048 CD590304 BY703048 CD590304 BY703048 CD590304 BY703048 CD270866 T143A0140 BU677715 NL_19_2 29 CD270866 T143A0140 CD668823 OSINEGISC CB668027 OSJNEGISC CB668027 OSJNEGISC CB668027 OSJNEGISC CB668028 CSJNEGISC CB668028 CSJNEGISC CB668028 CSJNEGISC CB668028 CSJNEGISC CB668028 CSJNEGISC CB668028 CSJNEGISC	GNMENTS 4 bp mENA linear EST 02-0CT-2003 Diploid Ustilaginomycetes; ginales; Ustilaginomycetes; gaville,B.J. lago maydis Diploid Filamentous Growth: alyses , Mississauga, ON, L5L 1C6, Canada O.ca M. row: 03 column: A GAGTAATACGACTCACTATAGGG 3') 754.
267 39.9 617 14 21.6 38.9 776 14 21.6 33.1 634 14 115.4 31.2 76 14 117.4 31.7 619 14 118.4 31.7 730 12 21.1 31.5 995 14 10.8 31.5 995 14 10.8 31.5 995 14 10.8 31.1 996 11 10.8 31.1 996 11 10.8 31.1 140 13 10.8 31.1 140 140 10.8 31.1 140 10.8 31.1 140 10.8 31.1 140 10.8 31.1 140 10.8 31.1 140 10	CF643863 CA76501 CA76501 CD489102 CD5431903 CF643518 DI960841 DHU60841 DHU60841 CD272097 DG272097 DG272097 DG272097 DG272097 DG321590 DG321590 DG321590 DG321590 DG467777 DG66783 DG66783 DG702534 AX002534 AX002534 AX002534 AX002534 CB5570 DG66783 DG707086 DG66783 DG707086 DG66783 DG707086 DG66783 DG66783 DG707086 DG668923 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892 CB66892	ALI 75 ed nd ila sti An xtb rtb
		us F 4029 4029 44) fe, K urin ion jon contc Road Road
	0000 0000 0000 0000 0000 0000 0000 0000 0000	llamento ll GI:37 naydis naydis naydis naydis naydis naydis 1 CIOÉ 31, Chof es Sion de cy Creat cy Creat cy Creat se Sion de se Sion
		68.3 Fig. 23 Fig. 23 Fig. 23 Fig. 23 Fig. 23 Fig. 23 Fig. 24 Fig. 24 Fig. 25 F
		633883 6338883 6633888 6633888 661138 661138 671119 671119 67119 67119 67119 671
E S S S S S S S S S S S S S S S S S S S		
		RESULT 1 CY6.38 8.68 LOCUS DEFINITI ACCESSION VERSION VERSION KEYWORDS ONGRANI REFERENC AUTHOR TITLE JOURNA COMMENT

```
Eukaryota; Fungi, Basidiomycota; Ustilaginomycetes;
Ustilaginomycetidae; Ustilaginales; Ustilaginaceae; Ustilaginomycetidae; Ustilaginales; Ustilaginaceae; Ustilaginomycetidae; Ustilaginales; Ustilaginaceae; Ustilago.

E 1 (bases 1 to 656)

S Nugent, K.G., Choffe, K. and Saville, B.J.
Gene Expression during Ustilago maydis Diploid Filamentous Growth:
EST Library Creation and Analyses

L Unpublished (2003)

Contact: Barry J. Saville
Saville Lab
University of Toronto
3359 Mississauga Road North, Mississauga, ON, L5L 1C6, Canada
Tel: 905 569 4702
Fax: 905 828 3792
Email: basville@utm.utoronto.ca
Plate: UTM-UM-D1288/9-017-UTM row: 06 column: G
Seq_primer: T7 Reverse (5' GAGTAATACGACTCACTATAGGG 3')
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /db_xxef="taxon:5270"
/db_xxef="taxon:5270"
/cell type="Mycelia"
/dev_stage="Filamentous diploid"
/clone lib="Filamentous Forced Diploid"
/note="Vector: pSport; mRNA was extracted from diploid mycelia. A cDNA library was constructed and unidirectionally cloned into pSPORT plasmid, with the use of the Superscript II cDNA Library Construction Kit."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CITTCCAGATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGG 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCACGACCATCAGACTTATG 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGCCCGCCATCTCGGAGGAGATCATGACCATCACCACACGAGGACCACCACCAGCTTTACG 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCACCAATCTCAACAACGCTATCAAGGCCTACAACTCGGCCATCTCGAGCAACGACGTTC 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCAAGCAGATTGAGCTCCAGAGCGCCATCAAGTTCAACGGCGGTGGCCACATTAACCACT 284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGAC 358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGCTCTTCTGGAAGAACCTTGCTCCTGCCAGCCAGGGGGGGTGGACAGCTTCAAGATGGTC 344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   crereceasas rereres de cacerrece es de crere es en caracidad de caracidad de caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracidad en caracid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGGCAAGGAGGATGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          479 CTAAGAAGCIGGAAGTCACCACGACGCCCAAGCAGGACCCTCTGCTTACTCACATTCCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              405 Acaciaccariccarccarccaraciae de la acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de la Acacidad de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             465 ACTCGAAGCTTGAGGTTGTCACCACCAAGGACCAGGACCCTCTGATCTCGCACCACCCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 284.4; DB 14;
Pred. No. 3.1e-66;
0; Mismatches 201; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Ustilago maydis"
/mol_type="mRNA"
/strain="FBD12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          High quality sequence stop: 656.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .656
        Ustilago maydis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
nes 405; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
        ORGANISM
                                                                                                                                  REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                     /db_xref="caxon:5270"
/db_xref="caxon:5270"
/cell_type="Mycelia"
/dev_stage="Filamentous diploid"
/dov_stage="Filamentous Forced Diploid"
/note="Vector: pSport; mRNA was extracted from diploid
mycelia. A cDNA library was constructed and
unidizectionally cloned into pSPORT plasmid, with the use
of the Superscript II cDNA Library Construction Kit."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CF644174 656 bp mRNA linear BST 02-OCT-2003 KI7 G06 Filamentous Forced Diploid Ustilago maydis cDNA 3', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CGATGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCA 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CATCAATCACTCTGTTGTTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCT 347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                551
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ccadertracercaccarcicaacarecrareaageceracaacregecearerege 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAACGACGTTCGCAAGCAGATTGAGCTCCAGAGCGCCATCAAGTTCAACGGCGGTGGCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAATGAGCTCGAGCCGCCATCTCGGAGGAGATCATGACCATCCACCACACCAAGCCACCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCAGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cecerceaarcreceaaarerereaecaeaecerreeecaecreceaecreeera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGAGGATGTGCTTACCCAGGTTAAGCTTCAGTCTGCTCTCAAGTTCAACGGAGGAGGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         348 CTCTGAAGGACCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                312 rcaadárdercerreaadeadedegeeredaagererringeeregeredaadeadead
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAGAAGTICAACGCIGACACCGCIGCTGICCAAGGAICCGGAIGGGCTGGCTITGGCIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  372 Arccaccircaacetracearrecearcearceaecercreerresecrescreserr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAACCCGCTTACTAAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            432 CAACCCCAAGAACTCGAAGCTTGAGGTTGTCACCACCAAGGACCAGGACCCTCTGATCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCACATTCCTATCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   492 GCACCACCCATCATCGGTGTCGACGCTTGGGAGCACGCTTTCTACCTCCAGTACAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGTCAAGCCTGACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGTTAAGGCTGACTACTTCAAGAACATTTGGTCGGTCATCAACTTCAAGGAGGCCGAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ·,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 14; Length 754;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            42.7%; Score 285.8; DB 14; llarity 66.5%; Pred. No. 1.4e-66; Conservative 0; Mismatches 207;
                                                                                'organism="Ustilago maydis"
Location/Qualifiers
                                                                                                                    /mol_type="mRNA"
/strain="FBD12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       648 CCGATTGCAGGCTGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGCTTCAAGGCTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
ses 410; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CF644174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCESSION
FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CF644174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
```

d δ g ò g δ g ð d ò d ò P ò g δ g à g ò

ö

Gaps

٠,

Indels

Length 656;

104

238

298

418 404 478 464 538 524 598

525 TCATCGGTGTCGACGCTTGGGAGCACGCTTTCTACCTCCAGTACAAGAATGTTAAGGCTG 584

g

GI:37413160

CF644174.1

VERSION KEYWORDS SOURCE

Ustilago maydis

TCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTG

셤 ð

```
CF643817
K13_A05 Filamentous Forced Diploid Ustilago maydis cDNA 3', mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                              479 CIAAGAAGCIGGAAGICACCACGACGGCCAACCAGGACCCTCTGCTTACTCACATTCCTA 538
      294 CGCTCTTCTGGAAGAACCTTGCTCCTGCCAGCCAGGCGGTGGACAGCTTCAAGATGGTC 353
                                                                                                                                                                                                                                                                                                                                                                             599 ACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGG 658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 (bases 1 to 702)
Nugent, K.G., Choffe, K. and Saville, B.J.
Gene Expression during Ustilago maydis Diploid Filamentous Growth:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /db_xref="taxxon:5270"
/del_type="Mycelia"
/dev_stage="Filamentous diploid"
/dev_stage="Filamentous rored Diploid"
/doub="Vector: pSport; mRNA was extracted from diploid
mycelia. A cDNA library was constructed and
unidirectionally cloned into pSPOMT plasmid, with the u
of the Superscript II cDNA Library Construction Kit."
                                                                                     cerricaadeadeacercaacercaacirradericacreaacercaaacercaacerrea
                                                                                                                                                                                                                                             474 ACTCGAAGCTTGAGGTTGTCACCACCAAGGACCCGCTCTGATCTCGCACCCCA
                                                                                                                                                                                                                                                                                            TCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                       CTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCA
                                                                                                                                                                                                                                                                                                                                    534 TCATCGGTGTCGACGCTTGGGAGCACGCTTTCTACCTCCAGTACAAGAATGTTAAGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ustilago maydis
Ustilago maydis
Eukaryota; Fungi; Basidiomycota; Ustilaginomycetes;
Ustilaginomycetidae; Ustilaginales; Ustilaginaceae; Ustilago.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      42.5%; Score 284.4; DB 14; Length 702; 66.8%; Pred. No. 3.3e-66; ive 0; Mismatches 201; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    University of Toronto
3359 Mississauga Road North, Mississauga, ON, L5L 1C6,
Tel: 905 569 4702
Fax: 905 83 3792
Bmail: bsaville@utm.utoronto.ca
Plate: UTM-UM-D128/9-013-UTM row: 05 column: A
Seq primer: T7 Reverse (5' GAGTAATACGACTCACTATAGGG 3')
High quality sequence stop: 702.
Location/Qualifiers
1. 702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /organism="Ustilago maydis"
/mol_type="mRNA"
/strain="FBD12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EST Library Creation and Analyses
Unpublished (2003)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Contact: Barry J. Saville
Saville Lab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CF643817.1 GI:37412471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
Matches 405; Conservat
                                                                                                                                                                                                                                                                                                                                                                                                                                                          659 CTGCTC 664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     654 CTGCCC 659
                                               359
                                                                                                                                                                                                                                                                                              539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
CF643817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMMENT
                                                                                 g
                                                                                                                                                                g
                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                              g
                                            ∂
                                                                                                                           à
                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                       CF643783 662 bp mRNA linear EST 02-OCT-2003 KI2_E10 Filamentous Forced Diploid Ustilago maydis cDNA 3', mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nugent, K.G., Choffe, K. and Saville, B.J.
Gene Expression during Usilago maydis Diploid Filamentous Growth:
EST Library Creation and Analyses
Unpublished (2003)
                                            644
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     119 AGCCCTCCATCTCCAAGGAGATCATGACCTTCACCACCACCAAGCACCATCAGACTTATG 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             114 AGCCCGCCATCTCGGAGGAGATCATGACCATCCACCACCAAGCACCACCACCAGCTTTACG 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               234 GCAAGCAGATTGAGCTCCAGAGCGCATCAAGTTCAACGCGGGGGGCGCCACATTAACCACT 293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTCTGTTCTGGAAGAACTTGGCTCCTATGGATCCGAGGAGGCTACCTCTCTGAAGGAC 358
                           585 ACTACTTCAAGAACATTTGGTCGTCATCAACTTCAAGGAGGCGGAGGAGGCGCTTCAAGG
599 ACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            54 crescedanárdrergadeacaeerreeagereeerraegeree
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    59 CTTTCCAGATCAGGGCAAAGCATACCCTGAGCTTCCTTACGCTTACGATGCCCTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            174 TCACCAATCTCAACACACTATCAAGGCCTACAACTCGGCCATCTCGAGCAACGACGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3359 Mississauga Road North, Mississauga, ON, L5L 1C6, Canada
Tel: 905 569 4702
Fax: 905 828 3792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                  Ustilago maydis
Eukaryota, Fungi, Basidiomycota, Ustilaginomycetes,
Ustilaginomycetidae, Ustilaginales, Ustilaginaceae, Ustilago,
1 (bases 1 to 662)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 14; Length 662;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Email: bsaville@utm.utoronto.ca
Plate: UTM-UM-D128/9-012-UTM row: 10 column: E
Seq primer: T7 Reverse (5' GAGTAATACGACTCACTATAGGG 3')
High quality sequence stop: 662.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  42.5%; Score 284.4; DB 14; Length ilarity 66.8%; Pred. No. 3.1e-66; Conservative 0; Mismatches 201; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  organism="Ustilago maydis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contact: Barry J. Saville
                                                                                                                                                                                                                                                                                                         CF643783.1 GI:37412406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         University of Toronto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 . .662
                                                                                                                                                                                                                                                                                                                                                 Ustilago maydis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                 CIGCIC 664
                                                                                                                     crecce 650
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Saville Lab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches 405;
                                                                               629
                                                                                                                     645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                       LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                   ACCESSION
                                                                                                                                                                                                                                                                                                      VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                      CF643783
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                               RESULT
```

g ð qq

g δ g

à

ö

87 4 147

207

274

387 394 507

567

```
5' sîmilar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EST 08-JAN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EST.

Oryza sativa (indica cultivar-group)

Oryza sativa (indica cultivar-group)

Oryza sativa (indica cultivar-group)

Bukaryota, Viridiplantes, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta, Magnoliophyta, Liliopsida, Poales, Poaceae;
                                                                                     /cell.type="Mycelia"
/dev_stage="Filamentous diploid"
/dev_stage="Filamentous Forced Diploid"
/clone lib="Filamentous Forced Diploid"
/note="Vector: pSport; mRNA was extracted from diploid
mycelia. A cDNA library was constructed and
unidirectionally cloned into pSPORT plasmid, with the use
of the Superscript II cDNA Library Construction Kit."
                                                                                                                                                                                                                                                                                                                                                                                                                                                         cccdacchogchincaachacdgrigdachcdagcccgcchinicarccaadarcahdgag 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        chacaccacaccadecaccadectarereadecreaceaeceaecaecaecaecaecae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TACTICGGCCGCTGTGGGCAAGGATGTGCTTACCCAGGTTAAGCTTCAGTCTGCTCTC 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAGTICAACGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTTGGCTCCCTAT 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AACTITAACGGCGGTGGTCACATCAACCACACTCTTTTGGGAGAATCTGGCCCCGCAG 334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGTTCTTTCGAGGCCTTCAAGAAGTTCAACGCTGCTGACGCTGCTGTCCAAGGATCC 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                dergerriegaccaecicaagrecaagricaargercagardecreccarecagggried 454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GGTTGGGGTTGGCTCGGCTACAACCCGCAGAACAAGCTCGACATTGTCACTACCGCC 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            515 AACCAGGACCCTCTGCTTCTGCATGTGCCTCTGGTGTCGACGCTTGGGAACATGCC 574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAGAAIGGCGGIGAGIIGAGCAGCGCGCICICAAGGACGCIAICGACGACCGAGTII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AACCAGGACCCTCTGCTTACTCACATTCCTATCGGAGTTGACATCTGGGAGCACGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTICACCACCAAGCACCATCAGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cretergaagegarecaeaagaaggaegreaceeegegaregeearegeeretreagaaageegare
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGATGGGGCTTGGCTTGAACCCGCTTACTAAGAAGCTGGAAGTCACCACGACCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CA765001 776 bp mRNA linear EST 08-JAN AF53-Rpf 05 M09 T7 039-abl IRRI Drought Stress Panicle Library Oryza sativa (indica cultivar-group) cDNA clone C0001833 5' sin to Superoxide dismutase (Mn), mitochondrial precursor (EC 11.5), mRNA sequence.
                                                                                                                                                                                                                                                                                                                                            GTGTCTAGACAGACTTTCGTCGTCCTGCTGCTTTCCAGATCAGGGCAAAGCATACCCTG
                                                                                                                                                                                                                                                                                                                                                                                CCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAAGGCTATCGAGGAATCTTTT
                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                       .,
                                                                                                                                                                                                                                                               Score 267; DB 14; Length 617;
Pred. No. 1.6e-61;
0; Mismatches 195; Indels (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TICIACCTICAGIACAAGAACGICAAGCCIGACIAICIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             organism="Ustilago maydis"
                                                                      xref="taxon:5270"
                              /mol_type="mRNA"
/strain="FBD12"
/db_xref="taxon:5
                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GI:27546712
                                                                                                                                                                                                                                                                     39.9%;
                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 66.3
Matches 384; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CA765001.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CA765001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              508
                                                                                                                                                                                                                                                                                                                                                                                                                             88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                268
                                                                                                                                                                                                                                                                                                                                                  28
                                                                                                                                                                                                                                                                                                                                                                                      35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
CA765001
LOCUS
DEFINITION
source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                             \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mRNA linear EST 02-OCT-2003
Ustilago maydis cDNA 3', mRNA
                                                                                                                                                                                                                                                                                                               358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       478
                                                                                                                                                                                                                                                                                                                                                                                          418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        658
                                                                                                                                                                                                                                                                                                                                                    381
                                                                                                                                                                                                                                                                                                                                                                                                                                 441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               681
                                                                                                                                                                                              261
                                                                                                                                                                                                                                    298
                                                                                                                                                                                                                                                                         321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Growth:
                      CTTTCCAGATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGG 118
                                                                                                                                                                                                                                                                                                                                                                                                                           cenicaageaggegicgaggaggachingeneggenegagaggicaaaggegegegeneg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGCCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATG
                                                                                                                 AGCCCGCCATCTCGGAGGAGATCATGACCATCCACCACCACCAGCACCACCACCAGCTTTACG
                                                                                                                                                         TTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGC
                                                                                                                                                                                              TCACCAATCTCAACAACGCTATCAAGGCCTACAAACTCGGCCATCTCGAGCAACGACGTTC
                                                                                                                                                                                                                                    gcaagcagarraagcrccagagcgccarcaagrrcaacggcggcggcgacarraaccacr
                                                                                                                                                                                                                                                                                                               CTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGAC
                                                                                                                                                                                                                                                                                                                                                    cecirciicideaadaaccirciccaccadccadccadaacacacrircaadardarc
                                                                                                                                                                                                                                                                                                                                                                                          CTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u> acectraccarreccarccarccacecrecacerrececrecerrecerricaaccecrasea</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTAAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Acrecaagerreagerrereaceaceaceaceaceagecererearereceaececea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TCATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rcarcescrerescerrescasescerriciaecrerecerecastacasearerrassecre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ustilago maydis
Ustilago maydis
Bukaryota, Fungi, Basidiomycota, Ustilaginomycetes,
Ustilaginomycetidae, Ustilaginales, Ustilago.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 (bases 1 to 617)
Nugent, K.G., Choffe, K. and Saville, B.J.
Gene Expression during Ustilago maydis Diploid Filamentous
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             University of Toronto
3359 Mississauga Road North, Mississauga, ON, LSL 1C6,
Tel: 905 569 4702
Fax: 905 828 3792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Figure 1: beaville@utm.utoronto.ca Plate: UTM-UM-D128/9-013-UTM row: 08 column: B Seq primer: TY Reverse (5' GAGTAATACGACTCACTATAGGG 3') High quality sequence stop: 617.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CF643863 617 bp
K13_E08 Filamentous Forced Diploid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BST Library Creation and Analyses Unpublished (2003) Contact: Barry J. Saville Saville Lab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CF643863.1 GI:37412562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CIGCIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            599
                                                                                                                                                                                                                                                                               262
                                                                                                                                                                                                                                                                                                                                                                                              359
                                                                                                                                                                                                                                                                                                                                                                                                                                     382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              682
                                            82
                                                                                 119
                                                                                                                       142
                                                                                                                                                              179
                                                                                                                                                                                                    202
                                                                                                                                                                                                                                         239
                                                                                                                                                                                                                                                                                                                     299
                                                                                                                                                                                                                                                                                                                                                        322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 5
CF643863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
```

q

ద ઠે 셤 8

a

q à

ð

g 8 원 à

8

Op ò 셤

ð

염

ò g

δ

ທ

```
/mol_type="mRNA"
/strain="FBBI/FB2"
/db Arsef="taxon:5270"
/del_type="Teliospore"
/dev_glage="Germinating teliospore"
/dev_glage="Germinating teliospore"
/dob host="R. coll"
/note="Vector: pDNR-LIB; Site_l: SfilA; Site_2: SfilB;
mRNA was extracted from graminating teliospores. CDNA was
amplified by PCR and unidirectionally cloned into pDNR-LIB
plasmid with the use of Clontech's Creator SMART CDNA
                                                                                                                                                                                                                                                                                         29-AUG-2003
        TTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCG 607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 78 GCGTCGTCGCCGCAGTTTTGTCGCCTCTGCCCCTGCGGCCGTGCGAGCCAAGCACACGCTT 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCTCAACGCTGCCGAGGAGAGC 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                208 TACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAAGCTTCAGTCTGCTCTC 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       138 CCCGACCTGGCTTTCGACTACGGTGCACTCGAGCCCGCCATTTCATCCAAGATCATGGAG 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             198 CTACACCACAAGCACCACCACCAGCTATGTCAACGGTCTCAACCAGGGGGAAGAGAG 257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   258 CTCTCTGAAGCGATCCACAAGAAGGACGTCAAGTCGGCAATCGCTCTTCAGAAAGCGATC 317
                                                     642 TCGACATCTGNNAACACGCNTTCTACTTGCAGTACAAGAATGTCAAGCCTGACTACCTCA 701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      268 AAGTTCAACGGAGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTTGGCTCCCTAT 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sacadura, N.T. and Saville, B.J.
Gene expression and EST analyses of Ustilago maydis germinating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GTGTCTAGACAGACTTTCGTCGCTCCTGCTGCTTTCCAGATCAGGGCAAAGCATACCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    University of Toronto
3359 Mississauga Road North, Mississauga, ON, L5L 1C6, Canada
Tel: 905 569 4702
Fax: 905 828 3792
Email: bsaville@utm.utoronto.ca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bukaryota, Fungi, Basidiomycota, Ustilaginomycetes,
Ustilaginomycetidae, Ustilaginales, Ustilaginaceae, Ustilago.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (5' AAACAGCTATGACCATGTTCA 3').
                                                                                                                                                                                                                                                                                       CD489102 634 bp mRNA linear EST 29
T18_F10 Teliospore Ustilago maydis cDNA 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          33.1%; Score 221.6; DB 14; Length 634; ilarity 65.0%; Pred. No. 3.9e-49; Conservative 0; Mismatches 190; Indels 2;
                                                                                                           608 CTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGG
                                                                                                                                                      702 AGGCCATCTGGAACGTNATCAACTTTGAAANATCGANAAGCGCTTTNAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Fungal Genet. Biol. 40 (1), 47-64 (2003)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Ustilago maydis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Library Construction Kit.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          primer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Barry J. Saville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Seq primer: M13 reverse
                                                                                                                                                                                                                                                                                                                                                                  CD489102.1 GI:34331609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (bases 1 to 634)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .634
                                                                                                                                                                                                                                                                                                                                                                                                                     Ustilago maydis
Ustilago maydis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      teliospores
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Saville Lab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                       CD489102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12948513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           357;
        548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                  VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                              CD489102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                         LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                             셤
                                                                                                        à
                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /dev stage="Flowering" /clone_lib="IRRI Drought Stress Panicle Library" /clone_lib="IRRI Drought Stress Panicle Library" sapplied by not watering for 4 consecutive days. Panicles were collected from control (well watered) and stressed plants at 2 days before heading, at heading, 50% flowering and 4 days after 50% flowering."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAGACTTATGTTAACGGCCTCA 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGGACGTGGTCACTACTGCCAACCAGGACCCCTNGGTGACTCACGAGCNCATNCTCGGTA 641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATGCCGCCGAAGAGACCCCGCCAAGTTTCAACAGTCGGGCGACGTCAAGGCGCAGATCA 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   342 ATTTGCAGGCCGCGTTGAAGTTTTAACGGNGGTGGNCACTTGAACCACTCGCTCTTCTGGC 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      402 GCAACCTCGCGCCGACCGACTCGGNCGCTACCAAGCCCGAAGCCGCTCCGACCTTTATCA 461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               428 CCGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGGACCCGCCTTACTAAGAAGC 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGAAGTCACCACGCCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAG 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       222 NGAAGGAGATCATGACGCTCCACCACCACCACCACCACCAGGCCTACGTCAATGGCCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GOGGACAGCACACCTGCCTGAGCTTCCGTACGCCTATGATGCGCTCGAGCCGTCCATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACGCTGCCGAGGAGAGCTACTCGCCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   311 AGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGAC---CTCTCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGCAGGTCGAAAAGGACTTTGGATCCCTCGAGGCGCTCAAGAATGAAATCAACACCAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGGCCGCGATCCAGGGATCGGNCTGGGGCTGGNTGGGCTACAACAAGAGGGGGGGGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                     S. Rudd of
                                                                                                                                                   On Dec 2, 2002 this sequence version replaced gi:25994256. Contact: Richard Brushkawich Biometrics and Bioinformatics Unit International Rice Research Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /organism="Oryza sativa (indica cultivar-group)"
/mol_type="mRNA"
/cultivar="IR64"
/db_xref="taxon:39946"
/clone="C0001833"
                                                           and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           38.9%; Score 260.4; DB 14; Length 776; llarity 65.1%; Pred. No. 1.2e-59; Conservative 0; Mismatches 203; Indels 3;
Ehrhartoideae; Oryzeae; Oryza.

1 (Dases 1 to 776)
Bennett,J., Arumugam,K., Lafitte,R., Wen,J., Rudd,S.
Bruskiewich,R.M.
IRRI Drought Stress Panicle cDNA Library
Unpublished (2002)
                                                                                                                                                                                                                                                                                                                               Email: r.bruskiewich@cgiar.org
International Rice Information System (IRIS;
http://www.iris.irri.org; b0201832
Assignment of putative function to the sequence by
Munich Information Center for Protein Sequences
(http://mips.gsf.ds
                                                                                                                                                                                                                                                         DAPO 7777, Metro Manila, Philippines
Tel: +63-2-845-0563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /tissue_type="Panicles"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             row: M column: 09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                               Fax: +63-2-845-0606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
Les 385; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Loca
Matches
                                                     AUTHORS
                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                     TITLE
                                                                                                                                                      COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DRIGIN
```

d

ð

g

셤 à g ò g ò q

à

пр δ Op à g ò qq à qq

à

```
Axenic plate culture") and a third library represents axenically grown plants ('FHIG:C') Axenic plate culture'). Libraries were analyzed in parallel and 3555 (FHIG:A), 3964 (FHIG:B), and 2532 (FHIG:C) high-quality (PHRED 20) ESTS of >99bp have been deposited. The CDNA libraries were constructed from total RNA using the SMART CDNA library Construction kit (#K1051-1, Clontech, Palo Alto, CA, USA) according to the manufacturer's instructions. Full-length CDNAs were trimmed by Sfii, fractionated and directionally ligated into (lambda)TriplEx2 arms. The lambda library was convexted to a plasmid library via site-specific recombination at loxP sites in a Cre+ strain (E. coli BM25.8). Plasmid clones were randomly collected and analysed by DNA sequencing using a plasmid-specific forward primer (P104)."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CF472965 TYDS1_12_E11.gl_A015 Drought-stressed loblolly pine roots DS1 Pinus taeda_CDNA clone RTDS1_12_E11_A015 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        360 TCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAA 419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        501 carcedraricaricaricaredesecerricaricaricaria con carceda de 1500 con concentrarica de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 con contrario de 1500 contrario de 1500 con contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 1500 contrario de 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   381 TGCTGCTACTGCTGCCATCCAGGGCTCTGGCTGGGGCTGGGCTGGGTTGAACCCCTCGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      91 gcadcadarcardacecrircaccacaagaacaccaccaaaccrargreacrecreaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            151 GGCCGCTGAAGTCAGTTACGC-----GAAACTGCTACTCCCAAGGAGCGCATCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           201 CCTCCAAGCTGCCCTCCGCTTCAACGGTGGTGGTCATATCAACCACTCCCTCTTCTGGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ----AGGAGGCTACCCTCTCTGAAGGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          261 GAACCTTGCACCTGCTAGCGAGGGCAAGGGCAAGGGTGGAGAGTCAAACCTGGCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      321 ATTGAAGGATGCCATCGACTCGAACTTTGGCTCGCTCGATAGCCTCAAGAAGGAATTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            480 TAAGAAGCIGGAAGICACCACGACGCCAACCAGGACCCICTGCTTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         441 caaacgretrgagarcgecaccacrecraaccagaccerercreageccacarreccar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CATCGGAGTTGACATC-TGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       31 degecalación de descripto de contra de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de decembra de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de descripto de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               132 CAAGGAGATCATGACCCTTCACCACACCACCATCAGACTTATGTTAACGGCCTCAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   72 GGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTC
    represents axenically grown fungus ('(FHIG:B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 215.6; DB 14; Length 606;
Pred. No. 1.6e-47;
0; Mismatches 179; Indels 23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                599 ACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  561 ATTACCTCAACGCAATCTGGAGCGTTATCAACTTCGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAACTTGGCTCCCTATGGATCCG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    taeda (loblolly pine)
taeda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CF472965.1 GI:34490337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     y Match 32.2%;
Local Similarity 65.1%;
nes 376; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pinus
Pinus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 9
CF472965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /db.xrefe="taxon:231415"
//db.xrefe="taxon:231415"
//tissue type="Bctomycorrhizal root tissue"
//dev_stage="25 days of growth after transfer/synthesis"
//db.host="Escherichia coli BM25.8"
//lone_lib="(FHIG:A) Ectomycorrhiza plate culture"
//note="vector: pTriplEx2; Site=1: Sfit; Site=2: Sfi1; This
//still form one of three cDNA libraries,
constructed for transcript profiling of the mycorrhizal
interaction between the basidiomycete Paxillus involutus
and Betula pendula (birch). One library represents the
developed and functional mycorrhizal root tissue
('(FHIG:A) Ectomycorrhiza plate culture'), a second
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /mol_type="mRNA"
/strain="ATCC200175(P.involutus);Skuleskogen,Skogsforsk,Sw
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EST 01-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                497
                                                                                                                                              387
                                                                                                                                                                                                                                 437
                                                                                                                                                                                                                                                                                                                             446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         558 CAACCAGGACCCTCTGCTCTCGCATGGCCTCTGNATCGGGGTCGACGCTTGGGAACATG 617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Johansson, T., Le Quere, A., Ahren, D., Soderstrom, B., Erlandsson, R., Lundeberg, J., Uhlen, M. and Tunlid, A.
Transcriptional responses of Paxilius involutus and Betula pendula during formation of ectomycorrhizal root tissue
Unpublished (2003)
Contact: Johansson, T.
CAACCAGGACCCTCTGCTTACTCACATTCCTAT-CATCGGAGTTGACATCTGGGAGCACG 565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             organism="Betula pendula/Paxillus involutus mixed EST
                                                                                                                                          GGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAAGGCTATCGAGGAATCTTTT
                                                                                                                                                                                                                             AAGAATGGCGGTGGTGAGTTGAGCAGCGCCTCTCAAGGACGCTATCGACCGAGACTTT
                                                                                                                                                                                                                                                                                                                             GGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACCCGCTGCTGTCCAAGG-ATC
                                                                                                                                                                                                                                                                                                                                                                                                            gengentriegaceceaecteaagnecaagnicaangencaganeecreecarecagenrie
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGGATGGGGCTGGCTTGGCTTGAACCCGCTTACTAAGAAGCTGGAAGTCACCACGACCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CD271903
T143A01367F (FHIG:A) Ectomycorrhiza plate culture Betula
pendula/Paxillus involutus mixed EST library cDNA 5', mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lund, Sweden
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Betula pendula/Paxillus involutus mixed EST library
Betula pendula/Paxillus involutus mixed EST library
ENkaryota; mixed EST libraries.
1 (Dases 1 to 606)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Fungal-Host Interaction Group (FHIG)
Microbial Ecology, Institution of Ecology
Ecology Building, Lund University, SE-223 62
Fax: +46 46 222 45 49
Email: tomas.johansson@mbioekol.lu.se
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FORWARD: P104 (5'-GGGAAGCGCCCATTGTGTT-3')
BACKWARD: P105 (5'-AGTGAGCTCGAATTGCGGCC-3')
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Seq primer: P104
High quality sequence stop: 606.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            eden (B.pendula)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GI:34383949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               909· .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCTTCTACC 626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            566 CTTTCTACC 574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CD271903.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  seguence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CD271903
                                                           318
                                                                                                                                              328
                                                                                                                                                                                                                                                                                                                             388
                                                                                                                                                                                                                                                                                                                                                                                                                     438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 8
CD271903
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
```

```
Cr643518 619 bp mRNA linear EST 02-OCT-2003
D91_E07 Filamentous Forced Diploid Ustilago maydis cDNA 3', mRNA
sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /clone lib="Filamentous Forced Diploid"
/note="Vector: pSport; mRNA was extracted from diploid mycelia. A cDNA library was constructed and unidirectionally cloned into pSPORT plasmid, with the use of the Superscript II cDNA Library Construction Kit."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    79 ATTGAGCTCCAGAGCGCCATCAAGTTCAACGGCGGTGGCCACATTAACCACTCGCTCTTC 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                366
                                  422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   139 regalgalactricereceaeceaeceaeceaeceaeceaeceaecaecircalateae 198
                                                                                                                                           482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nugent, K.G., Choffe, K. and Saville, B.J.
Gene Expression during Ustilago maydis Diploid Filamentous Growth:
EST Library Creation and Analyses
Unpublished (2003)
                                                                                                                                                                                                 560 AGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTGCTGTTTGGT 619
                                                                                                                                                                                                                                                 483 AGCACGCCTTCTACCTCCAGTACCTCAACGTTAAGGCTGATTACCTCGAGGCTATCTGGA 542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             307 TGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAG
363 AGGGGTCTGGCTGGTGCTGGCTCGGGTTGAACCCCGTCACCAAGCGCTTGGAGATCACCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTCAACGCTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              crchachacarderrangederrachacareregederregadarearearearea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    247 GITAAGCITCAGICICICICAAGTICAACGGAGGAGGACACATCAATCACTCICIGITC
                                                                                                                                           423 ccaccccraarcaggarccrcrcrrrgaarrrgarcccgarcarcaggcgrcaacargragg
                                                                                        CGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAGTTGACATCTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota, Fungi, Basidiomycota, Ustilaginomycetes;
Ustilaginomycetidae, Ustilaginales; Ustilaginaceae; Ustilago.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          University of Toronto
3359 Mississauga Road North, Mississauga, ON, L5L 1C6, 1
Tel: 905 569 4702
Fax: 905 828 3792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         31.7%; Score 212.4; DB 14; Length 619; 65.3%; Pred. No. 1.2e-46; Live 0; Mismatches 166; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seg primer: T7 Reverse (5' GAGTAATACGACTCACTATAGGG 3')
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   column: E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /mol_type="mRNA"
/strain="FBD12"
/db_xref="taxon:5270"
/cell_type="Mycelia"
/dev_stage="Filamentous diploid"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Plate: UTM-UM-D126/7-091-UTM row: 07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      organism="Ustilago maydis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      High quality sequence stop: 619.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Email: bsaville@utm.utoronto.ca
                                                                                                                                                                                                                                                                                                                620 CCGTTATCAACTACAAGGAGGCAGA 644
                                                                                                                                                                                                                                                                                                                                                                543 Acgrearchachgeagagaganah 567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contact: Barry J. Saville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CF643518.1 GI:37411895
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (bases 1 to 619)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ustilago maydis
Ustilago maydis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Saville Lab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CF643518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     312;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           187
                                                                                           200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CF643518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                           ð
                                                                                                                                              g
                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="mrRNA"
/strain="CLONES"
/db_raref="warcon:3352"
/db_raref="warcon:3352"
/dlone="mrRDS1 12 E11 A015"
/dlone="mrDS1 12 E11 A015"
/dlone="mrDS1 12 E11 A015"
/dlone="mrDS1 12 E11 A015"
/dlone="mrDsught-erressed loblolly pine roots DS1"
/mole="Wetcor: pSL1180; Site 1: BCORI; Site 2: XhoI; The library was prepared from polyA+ RNA from drought-stressed loblolly pine (Pinus taeda) roots. Warer was withheld from ramet clones until predawn needle warer potential reached -1.75 MPa. On day 7 roots were harvested for RNA isolation. Double-stranded cDNA was cloned unidirectionally into pSL1180. Inserts excised with ECORI (5' end) and XhoI (3' end)."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RNA prepared and library constructed by W. Walter Lorenz, School of Forestry, University of Georgia; plant material prepared at the University of Florida; sequencing done in the Laboratory for Genomics and Bioinformatics, University of Georgia. Sequence ends have been trimmed to exclude vector and regions below Phred quality 16. Three-prime sequences are presented as their reverse complement and have been trimmed to exclude polyA. Seq prime: JENREV (CAGGAAACAGCTATGACC).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTGCTCTCAAGTTCAACGGAGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTTGG 319
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       303 CTAICTCGGACAGITICCAGAACTIGAAGGCGGAGTICAAGGCTGCTGCGTTGGGCATIC 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         440 AAGGATCCGGATGGGGCTGGCTTGAACCCGCTTACTAAGAAGCTGGAAGTCACCA 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGAGA 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCTCAACGCTGCCG 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183 crecitigaariicaaceeegreeceaciariiaaccacicciigiicigaacaacaide 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TCATGGAGCTTCACCACAAGGCATCATCAGACCTATGTCAACGCCCTAAACGAAA 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           200 AGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTTAAGCTTCAGT 259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 132 CCAATGCTTACTCCAGTGCTACATCAGCAAAAAAGGGGAATCGCC-----CTCCAAG 182
  Eukaryota, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Coniferopsida; Coniferales; Pinaceae; Pinus, Pinus.
1 (bases 1 to 736)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            77
                                                                                                                                                                          An EST database from drought-stressed loblolly pine (Pinus taeda)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAGAAGGCTATCGAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                380 AATCTTTGGTTCTTTCGAGGCCTTCAAGAAGATTCAACGCTGACACCGCTGCTGTCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Laboratory for Genomics and Bioinformatics
The University of Georgia, Department of Plant Biology
Plant Sciences Building, Rm. 2502, Athens, GA 30602-7271, USA
                                                                                             Pratt,L., Cordonnier-Pratt,M.-M., Lorenz,W.W., Dean,J.,
Gebremedhin,M., Dervinis,C., Martin,T., White,T., Davis,J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               32.2%; Score 215.4; DB 14; Length 736; 62.8%; Pred. No. 2.1e-47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Mismatches 201;
                                                                                                                                                                                                                                   Unpublished (2003)
Other_ESTS: RTDS1_12_E11.b1_A015
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           organism="Pinus taeda"
                                                                                                                                                                                                                                                                                         Contact: Cordonnier-Fratt MM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Email: mmpratt@uga.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                Tel: 706 542 1860
Fax: 706 583 0210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                         Neale, D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Sim:
Matches 355;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      320 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       source
                                                                                                                                                                                                                                   JOURNAL
                                                                 REFERENCE
                                                                                                   AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                TITLE
                                                                                                                                                                                                                                                             COMMENT
```

DRIGIN

셤 δ d 8 원 gg à g

δ 셤 ð

Gaps

18;

Indels

Pred. No. 1.5e-46; 0; Mismatches 193;

GAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT

188

308

488 569 539 629 599

TTACTCACATTCCTAT

us-09-727-855b-4.rst

Db

à

gg

ò

qq

à q

à

d

```
CGCTCTTCAGCCTGCACTGAAGTTCAATGGTGGGGGACATATTAATCACACCATTTTCTG 398
                                                                                                                                                                                                                                                                                                                                                                                                        GGCTATCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       630 GCTGGGGATTGACGTGTGGGAGCACGCTTACTACCTTCAGTATAAAAACGTCAGACCTGA 689
                                                                                                                                                                                                                                                                                                                                                                                                                                   450 GGCTATCAAGCGTGACTTTGGGTCTTTTGAGAAGTTTTAAGGAGAAGAGCTGACAGCCGTGTC
                                                                                       159 CCGGCACAAGCACAGCCTCCCAGACCTGCCTTACGACTATGGCGCGCTGGAGCCACACT
                                                                                                                        CTCCAAGGAGATCATGACCCTTCACCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                           219 TAACGCGCAGATCATGCAGCTGCACCACAGCAAGCACCATGCGGCCTACGTGAACAACCT
                                                                                                                                                                                                                              GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                     399 GACAAACCTGAGCCCTAAGGGTGGTGGAGAACCTA-----AAGGAGAGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                             CAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   570 ACAGATIGCIGCCIGCICIAAICAGGACCCATIGCAAGGAACAACAGGCCTIATICCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC
                                                    CAGGGCAAAGCATACCCTGCCT
63.48;
Best Local Similarity 63.4
Matches 366; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CF583893
                                                                                                                                                                                                                              279
                                                                                                                                                                                                                                                                                                   339
                                                                                                                                                                                                                                                                                                                                    309
                                                                                                                                                                                                                                                                                                                                                                                                        369
                                                                                                                          129
                                                                                                                                                                                             189
                                                    69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 12
CF583893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCUS
                                                                                   셤
                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                임
                                                                                                                                                                                                                                                                                                                                                                                                                                         DP
DP
                                                      ઠે
                                                                                                                          S
                                                                                                                                                                                           ò
                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
DNA Sequencing by: Incyte Genomics, Inc.
Clone distribution: NCI-CGAP clone distribution information can be
found through the I.M.A.G.E. Consortium/LLNL at:
http://image.llhl.gov
Plate: LLAMI1647 row: f column: 04
High quality sequence stop: 724.
                                                                                                                                                                                                                                                                                                                                                                                                                        EST 16-OCT-2001
                    426
                                                                                     486
                                                                                                                                                           546
                                                                                                                                                                                                                              909
                                                                                                                                                                                        circaaggirgreacaccaaggaccaagaaccicicaarcreacaccacccarcarcarcaga 378
                                                                                                                                                                                                                                                        379 drcdacgerregeaecacecrreracerecagracaagaardraagecreacracrre 438
                                                                                                                                                                                                                                                                                                                                                                                                                   BI904486 730 bp mRNA linear EST 16-OCT-200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
1 (bases 1 to 730)
                                                                                                                                                                                                                                                                                                                    AAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGAC
                                                                                                                                                     CTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATCGTA
                                               199 chédecericahacerentrificaricarentehacerentahanean cancerentehacere
                                                                                  ACCGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGAACCCCGCTTAAGAAG
                                                                                                                    ATTGCCACCATCCAGGGCTCGTTGGGGCTGGCTCGGTTTCAACCCCAAGAACTCGAAG
                                                                                                                                                                                                                         547 GITGACATCIGGGAGCACGCITICTACCITCAGIACAAGAACGICAAGCCTGACTAICTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NIH MGC http://mgc.nci.nih.gov/.
National Institutes of Health, Mammalian Gene Collection (MGC)
Unpublished (1999)
                                                                                                                                                                                                                                                                                              607 GCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ph.D., M. Fatima
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Contact: Robert Strausberg, Ph.D.
Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Gilbert Smith, Ph.D.
CDNA Library Preparation: M. Bento Soares,
Bonaldo, Ph.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               organism="Mus musculus"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /mol_type="mRNA"
/strain="Czech II"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BI904486.1 GI:16166831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .730
                                                                                                                                                                                                                                                                                                                                                                                                                                                       mRNA sequence.
BI904486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mus musculus
Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EST
                                                                                                                                                                                        319
                                                                                                                    259
              367
                                                                                  427
                                                                                                                                                       487
                                                                                                                                                                                                                                                                                                                                                                                                                                     DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AUTHORS
TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                  RESULT 11
BI904486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                     LOCUS
```

```
EST 24-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
1 (bases 1 to 995)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       In Lobases 1 to 732,

NIH-MGC http://mgc.nci.nih.gov/.

National Institutes of Health, Mammalian Gene Collection (MGC)

Oppublished (1999)

Contact: Daniela S Gerhard, Ph.D.

Office of Cancer Genomics

National Cancer Institute / NH.

National Cancer Institute / NH.

Bldg. 31 RmloA07 Betheada, MD 20892

Email: cgapberr@mail.nih.gov

Tissue Procurement: Gerard Gradwohl (PNAS 97 P1607-1611, 2000)

CDNA_Library Preparation: Catherine Lee, Endocrine Pancreas
                                                                                                                                                                                                                                                                   CF583893 995 bp mRNA linear BST 24-SEP-AGENCOURT 11364483 updated NIH MGC_137 Mus musculus cDNA clone IMAGE:6431706 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL) DNA Sequencing by: Agencourt Bioscience Corporation Clone distribution: MGC clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: http://image.llnl.gov
                                                                          crarcraaaccrarrrccaarcraarcaacrccada 726
CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                CF583893.1 GI:35197155
```

DB 12; Length 730;

Score 212.2;

31.7%;

Query Match

```
Eukaryota; Fungi; Ascomycota; Pezizomycotina; Sordariomycetes; Hypocreomycetidae; Hypocreales; Nectriaceae; Gibberella. [ bases 1 to 746]
Trail,F., Xu,J.-R., San Miguel,P., Halgren,R.G. and Kistler,H.C. Analysis of expressed sequence tags from Gibberella zeae (anamorph
                                                                                                                         Fusarium graminearum)
Fungal Genet. Biol. 38 (2), 187-197 (2003)
22508120
                                                                                                                                                                                                                                                                                                                                                            1. 746
/organism="Gibberella zeae"
/mol_type="mRNA"
/strain="NRRL 31084"
                                                                                                                                                                                                                                                                                                       Email: trail@msu.edu
Plate: 1 row: K column: 18
                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                Michigan State University
East Lansing, MI 48824, USA
Tel: 517 432 2939
Fax: 517 353 1926
                                                                                                                                                                                              Contact: Frances Trail
Department of Plant Biology
                  Gibberella zeae
                                                                                                                                                                               12620255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
SOURCE
ORGANISM
                                                                                                                                          JOURNAL
MEDLINE
PUBMED
                                                                                      AUTHORS
TITLE
                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                  COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                              /clone lib="NITH MGC_137"
/note="Organ: pancress; Vector: pSPORTI; Site 1: Sall;
Site_2: NotI; Library consists of a pool of clones
rearrayed from the following libraries: Melton normalized
mixed mouse pancreas 1 NI-MMSI, Amplified Melton mouse
islets 1 MISI-A, and Kaesther nggla Wt. Clones rearrayed in
the laboratory of K. Kaestner (University of
Pennsylvania). Note: this is a NIH_MGC Library."
                                                                                                                                                                                                                                                                                                                                                                                                   2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             539
                                                                                                                                                                                                                                                                                                                                                                                                                                     128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          304 cgcrcrrcagccrgcacrgaagrrcaarggrggggggggacararraarcacacrarrrrcrg 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540 CATCGGAGTIGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 595 GCTGGGGATTGACGTGTGGGAGCACGCTTACCTACCTTCAGTATAAAAACGTCAGACCTCAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                     CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      124 ccescacaascacascarcacasacarscartacsacrarssacsacsacacacacacaca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   244 CAACGCCACCGAGGAGAAGTACCACGAGGCTCTGGCCAAGGGAGATGTTACAACTCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ------AAGGAGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      415 GGCTATCAAGCGTGACTTTTGGGTCTTTTGAGAAGTTTTAAGGAGAAGCTGACAGCCGTGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          --TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               535 acagaringcingcincinalicadeaccaringcaaggaacaacaggccinaliccsci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          129 CICCAAGGAGAICAIGACCTICACCACCAAGCACCAICAGACTIAIGITAACGGCCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            184 TAACGCGCAGATCATGCAGCTGCACCACAAGCAACCATGCGGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAACGCTGCCGAGGGGGGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            475 TGTGGGAGTCCAAGGTTCAGGCTGGGCTGGCTTGGCTTCAATAAGGAGCAAGGTCGCTT
                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                     18;
                                                                                                                                                                                                                                                                                                                                                            31.5%; Score 211; DB 14; Length 995; 63.2%; Pred. No. 3.9e-46; ive 0; Mismatches 195; Indels 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             crarcreaascrarrregaareraarcaacregeasaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   364 GACAAACCIGAGCCCTAAGGGTGGTGGAGAACCCA-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC-
     column: 07
                                                                                             organism="Mus musculus"
                  High quality sequence start: 21
High quality sequence stop: 522.
Location/Qualifiers
1.995
                                                                                                          /mol_type="mRNA"
/db_xref="taxon:10090"
                                                                                                                                              /clone="IMAGE:6431706"
/lab_host="DH10B"
                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
       Plate: IRBD19
                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                     Matches 366;
                                                                                                                                                                                                                                                                                                                                                                                                                                        69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 309
                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                  DRIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
```

```
425
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        368 AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAGTIGACATCIGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATC 604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCATTGACGCCTGNGAGCACGCCTACTACCTTCAGTACCAGAACGCCGAAGGCCGAGTACT 665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                246 TCAACAACGCTACCGACGCCATCGCCGAGGCCAACCAAGGGCGACGCCAAGGCTGCTG 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTGTGAAGGACCTCTCAAGA 367
/db xref="taxon:5518"
/clone lib="Carbon-starved mycelia"
/note="Yector: Uni-ZapII; Site_1: EcoRI; Site_2: XhoI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                366 eggadaloctroctacoalograndes de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas de acestas d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             486 TCGCCGGTATCCAGGCTCCGGCTGGGCTCGTCAAGAACAAAAACGCTCGCACTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCGCTGCTGTCCCAAGGATCCGGATGGGGCTGGCTTGGCTTGAACCCGGCTTACTAAGAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGGAAGTCACCACGCCAACCAGGACCTCTGCTTACTCACATT----CCTATCATCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rercenternaecesacecaaceaaecaaececencacesaacentaacenteasecenteide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    126 recedendadescraererecedarerrecenaciaescrardesceererreadeceracia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         128 TCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  186 rereregeczagarcargsagerreaccaeczecaageaccaagaccraegrander
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TCAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGCCAAGGAGGATGTGCTTACCCAGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      68 TCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                   Length 746;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                   31.5%; Score 210.8; DB 13; 61.9%; Pred. No. 3.7e-46; ive 0; Mismatches 213;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCGCTGCTGTTTGGTCCGTTATCAACT 631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rcagcgccarcragaacgrcarcaacr 692
                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 61.9
Matches 351; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
```

EST 26-AUG-2002

746 bp mRNA linear EST 26-AUG-2 Carbon-starved mycelia Gibberella zeae cDNA, mRNA

BU060841.1 GI:22501130

Fgr-C_1_K18_T3 sequence.

DEFINITION RESULT 13 BU060841

ACCESSION VERSION KEYWORDS

BU060841

linear

557

```
AT002967 AT002967 HOSLM01 Pleurotus ostreatus CDNA clone 460LM, mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota, Fundi; Basidiomycota, Hymenomycetes, Homobasidiomycetes, Agaricales; Pleurotaceae; Pleurotus.

1 (bases 1 to 468)
Lee, S.H., Kim, B.G., Kim. K.J., Lee, J.S., Yun, D.W., Hahn, J.H., Kim, G.H., Lee, K.H., Sub, D.S., Kwon, S.T., Lee, C.S. and Yoo, Y.B. Comparative Analysis of Sequences Expressed during the Liquid-Cultured Mycelia and Fruit Body Stages of Pleurotus
121 cgaagarrrcaagaaaagrrcaacacaaccacrecre-rerccaaggcagregerigge 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Email: bgkim@niast.go.kr
Submitted through BRIC(Biological Research Information Center) of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /dev stage="shaking liquid cultured mycelia"
/lab_host="E.coli"
/clone lib="POSIMO1"
/note="Vector: lambda Uni-ZAP XR; Site 1: EcoRI; Site 2:
XhoI; average insert size:1000 bp;initial pfu:5 X 10 7
Library information:Isolation of total RNA from the
mycelia incubated in shaking liquid MCM media at 30 deg (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and Technology (NIAST)
Korea
                                                                                                 498 NGGTTGGGGNTGGCTCGGCTACAACCCGCAGAAGCTCGACATNGTCACTACCGC
                                                               --GGATGGGGCTGGCTTGGCTTGAACCCGCTTACTAAGAAGCTGGAAGTCACCACGACGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 336 GGAGGCTACCCTCTCAAAGACCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGGAGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 cegregregrearcarcacrererereregaagaacerrecacrecraceraa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 cegaegecaaacirceaeareececricaaecaaeceareeaaecririeecaecer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>;</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 468;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Division of applied microbiology
National Institute of Agricultural Science
Seedundong, Suwon, Kyung-gi 441-707, South
Email: bgkim@niast.go.kr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    31.3%; Score 209.6; DB 9; 72.9%; Pred. No. 6e-46; iive 0; Mismatches 104;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Genet. Biol. 35 (2), 115-134 (2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'organism="Pleurotus ostreatus"
                                                                                                                                                                                                                                                                                                                                                                                                            Pleurotus ostreatus (oyster mushroom)
Pleurotus ostreatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      URL: http://bric.postech.ac.kr/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="mRNA"
/cultivar="ASI 2029"
/db_xref="taxon:5322"
/clone="460LM"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0:
                                                                                                                                             CAACCAGGACCCTCTGCT 524
                                                                                                                                                                                 558 chaccaddacccrcracr 575
                                                                                                                                                                                                                                                                                                                                                                   AT002967.1 GI:6934694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: Kim BG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ostreatus
                                                                                                                                                                                                                                                                                                                                 sednence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21838665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11848675
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fungal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Simi
nes 283;
                       438
                                                             448
                                                                                                                                             507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                396
                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                             ORGANISM
                                                                                                                                                                                                                                               RESULT 15
AT002967
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
MEDLINE
                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED
                                                                                                                                                                                                                                                                                                                                                                                         KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TITLE
                                                                                                                                                                                                                                                                                                                                                                      VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                     LOCUS
                                                                                                                                                                           qq
                                                           ⋩
                                                                                               d
                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \stackrel{>}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /clone lib="Teliospore" / folia, Site_1: SfilA, Site_2: SfilB, note="Vector: pDNR-LIB; Site_1: SfilA, Site_2: SfilB, manA was extracted from germinating teliospores. cDNA was amplified by PCR and unidirectionally cloned into pDNR-LIB plasmid, with the use of Clontech's Creator SWART cDNA Library Construction Kit."
                                                           EST 29-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCGTCGTCGCGCAGTTTTGTCGCCCTCTGCCGCGGCCGTGCGAGCCAAGCACACGCTT 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               88 CCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGAGATCATGACC 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cccaaccigacrircaacracacracacracacccaccairricarccaadarcardaag 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTTCACCACCAAGCACCATCAGACTTAATGTTAACGGCCTCAACGCTGCCGAGGAGAGC 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAGIICAACGGAGGACACAICAAICACICICIGIICIGGAAGAACIIGGCICCCIAI 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              318 AACTTTAACGGCGGTGGTCACATCAACCACTCTCTTTTGGGAGAATCTGGCCCCGCAG 377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       388 GGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACCGCTGCTGTCCAAGGATCC 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       87
                                                                                                                                                                                                                                                                                 of Ustilago maydis germinating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTACACCACACCAAGCATCACCAGACCTATGTCAACGGTCTCAACCCGGCGGAAGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28 GTGTCTAGACAGACTTTCGTCGCTCCTGCTGTTTCCAGATCAGGGCAAAGCATACCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TACTCGGCCGCTGTGGCCAAGGAGGATGTGCTTACCCAGGTTAAGCTTCAGTCTGCTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               258 crcrcrdaadcgarccacaadaaddaccrcacacaacccaarccacrcrrcadaaadccarc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      328 GGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAGAAGGCTATCGAGGAATCTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                378 AAGAATGGCGGTGGTGAGTTGAGCAGCGGCGCTCTCAAGGACGCTATCGACGAGACTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                L5L 1C6, Canada
                                                                                                                                                      Ustilago maydis
Ustilago maydis
Bukaryota, Fungi, Basidiomycota, Ustilaginomycetes,
Ustilaginomycetidae, Ustilaginales, Ustilaginaceae, Ustilago.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Email: bsaville@utm.utoronto.ca
Seg primer: M13 reverse primer (5' AAACAGCTATGACCATGTTCA 3').
Location/Qualifiers
1. .577
                                                       l
Teliospore Ustilago maydis CDNA 5', mRNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 210.4; DB 14; Length 577; Pred. No. 4.1e-46; 0; Mismatches 173; Indels 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                           3359 Mississauga Road North, Mississauga, ON,
Tel: 905 569 4702
Fax: 905 828 3792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref="taxon:5270"
/cell_type="Teliosspore"
/dev_stage="Germinating teliospore"
/lab_host="E. coll"
                                                                                                                                                                                                                                                                                                                         Genet. Biol. 40 (1), 47-64 (2003)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         organism="Ustilago maydis"
                                                                                                                                                                                                                                                                               Gene expression and EST analyses
                                                                                                                                                                                                                                                         Sacadura, N.T. and Saville, B.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mol_type="mRNA"
strain="FB1/FB2"
                                                                                                                                                                                                                                                                                                                                                                                    Contact: Barry J. Saville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                            T03_D04 Teliospore Ustil
CD488011
CD488011.1 GI:34330509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31.4%;
65.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                        University of Toronto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        324; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                    teliospores
                                                                                                                                                                                                                                                                                                                                                                                                     Saville Lab
                                                       CD488011
                                                                                                                                                                                                                                                                                                                                                               12948513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           80.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                          DEFINITION
                                                                                                                                                        SOURCE
ORGANISM
                                                                                                                                                                                                                                                            AUTHORS
TITLE
              RESULT 14
CD488011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                          MEDLINE
PUBMED
                                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                       KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                  VERSION
                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
```

້ວ

ij

Gaps

395

09

Search completed: April 1, 2004, 21:52:38 Job time: 1732 secs

This Page Blank (uspto)

```
April 1, 2004, 12:34:16 ; Search time 233.318 Seconds (without alignments) 10723.022 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                    1 atgictgitcgagcatccci......gattgcaggctgctctctaa 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1: /cgm2_6/ptodata/1/pubpna/US07_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US06_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US06_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US06_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US06_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US07_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US08_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US08_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US09_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US09_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US09_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US09_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US09_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US09_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US10_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US10_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US10_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US10_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US10_PUBCOMB.seq:*
cgm2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
cgm2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /cgn2_6/ptodata/1/pubpna/US10C_PUBCOMB.seq:
/cgn2_6/ptodata/1/pubpna/US10_NEW_PUB.seq:*
/cgn2_6/ptodata/1/pubpna/US60_NEW_PUB.seq:*
/cgn2_6/ptodata/1/pubpna/US60_NEW_PUB.seq:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2465228 segs, 1869859620 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Published Applications NA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Listing first 45 summaries
                                                                                                                                        OM nucleic - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Post-processing: Minimum Match 0% Maximum Match 100%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                US-09-727-855B-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IDENTITY NUC
                                                                                                                                                                                                                                                                                                                                                                                                  699
                                                                                                                                                                                                                                                                                                                                                                Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                Run on:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

	Description	Sequence 4, Appli		Sequence 3,	Sequence 4.	Sequence 29	Sequence 1627.			Sequence 836, App		Sequence 1822, Ap				S
SUMMARIES	ID	US-09-727-855B-4	US-09-727-855B-6	US-10-109-670-3	US-10-109-670-4	US-10-109-670-29	US-09-917-800A-1627	US-10-424-599-9040	US-10-424-599-9040	US-10-044-090-836	US-10-198-846-1350	US-09-954-456-1822	US-10-342-887-509	US-10-342-887-1905	US-10-198-846-13787	US-09-770-445-745
	DB	6	Q	14	14	14	6	12	12	13	14	σ	12	12	14	6
	Query Match Length DB	699	597	728	812	630	1492	987	2217	972	966	1026	1026	1026	2825	817
do	Query Match	100.0	47.3	37.7	37.5	33.0	30.6	30.3	29.8	29.6	29.6	29.6	29.6	29.6	29.6	28.1
	Score	699	316.6	252	250.6	220.6	205	202.8	199.6	197.8	197.8	197.8	197.8	197.8	197.8	188
	Result No.	н	7	Э	4	5	Q	c 7	89	D	10	11	12	13	14	15

Sequence 122, App	22,		709,	7,6	Sequence 1, Appli	Sequence 25, Appl	Sequence 1, Appli	Sequence 182, App	Sequence 1, Appli	Sequence 3227, Ap	Sequence 1, Appli	Sequence 5397, Ap	Sequence 1, Appli	Sequence 14744, A	Sequence 16177, A	Sequence 8, Appli	Sequence 24298, A	Sequence 11, Appl	Sequence 4975, Ap	Sequence 13978, A	731,	Sequence 13976, A	Sequence 14457, A	Sequence 12575, A	Sequence 5493, Ap	-Œ	Seguence 45520, A	Seguence 5724, Ap	Sequence 12085, A
14 US-10-247-671-122	10 US-09-971-429B-22	15 US-10-310-154-294	13 US-10-044-090-709	14 US-10-230-331-9	9 US-09-727-855B-1	14 US-10-109-670-25	9 US-09-818-564-1	10 US-09-911-904-182	15 US-10-289-762-1	9 US-09-738-626-3227	σ	14 US-10-156-761-5397	14 US-10-156-761-1	9 US-09-960-352-14744	10 US-09-918-995-16177	9 US-09-987-190-8	10 US-09-918-995-24298	9 US-09-993-333-11	9 US-09-960-352-4975	9 US-09-960-352-13978	9 US-09-960-352-731	9 US-09-960-352-13976	9 US-09-960-352-14457	9 US-09-960-352-12575	9 US-09-960-352-5493	9 US-09-920-455-67	12 US-10-424-599-45520	9 US-09-960-352-5724	9 US-09-960-352-12085
894	1067	1295	2208	732	3632	371	1143	477	1230025	009	3309400	639	9025608	424	477	721	344	325	419	429	414	432	398	456	425	376	562	413	417
27.7	27.6	27.2	26.6	25.5	22.6	21.2	20.8	20.3	20.1	19.9	19.9	19.0	19.0	18.4	17.3	16.7	16.6	16.0	15.8	15.7	15.3	15.1	15.0	14.7	14.6	14.0	13.8	13.5	13.5
185.4	184.6	182.2	178	170.8	151.4	142	139	136	134.6	133.4	133.4	127	127	123.4	116	111.4	111	107	106	104.8	102.6	100.8	100.4	98.6	98	93.8	92.4	90.6	90.6
16	17	18	19	20	21	22	23	24	25	56	27	78	c 29	30	31	32	33	34	35	36	37	c 38	39	c 40	c 41	42	43	44	c 45
													•									•		Ü	~				

ALIGNMENTS

```
Sequence 4, Application US/09727855B
Patent No. US20020168703A1
GENERAL INFORMATION:
APPLICANT: HOSHINO, Tatsuo
APPLICANT: OJIMA, Kazuyuki
APPLICANT: GINVENTION:
APPLICANT: GINVENTION: MATERIALS THEREOF
TITLE OF INVENTION: MATERIALS THEREOF
THE REPRENEUR: 2000-12-01
NUMBER OF SEQ ID NOS: 17
SOFTWARE: PATENTIN VERSION 3.1
SEQ ID NO 4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 TICCAGATCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 TICCAGATCAGGGCAAAGCATACCCTGCCTGAGCTTTCCTTACGCTTACGATGCCCTGGAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121 CCCTCCATCTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTT 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ATGICIGITCGAGCATCCCTCTTCCGTGTCTAGACAGACTTTCGTCGCTCCTGCTGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 Argiciatrosacearcororororororasacasacarororosorororororororora
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 100.0%; Score 669; DB 9; L
Best Local Similarity 100.0%; Pred. No. 2.6e-213;
Matches 669; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C, G or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        = A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: DNA
ORGANISM: Phaffia rhodozyma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCATION: (1)..(666)
OTHER INFORMATION: n or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: CDS
RESULT 1
US-09-727-855B-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-727-855B-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
```

```
ON: (1)..(728)
INFORMATION: Strandedness:double-Topology:linear-Molecule Type:cDNA to mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          128 TCTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCC 187
                                                                                                                                309
                                                                                                                                                                                                                                                                                                351
                                                                                                                                                                                                                                                                                                                                                                                                                                   471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AACGCCGCTATCCAGGCTTTCTCCCAGACCAATGACATCAAGG------CCCAGATC 171
                                                                                                                                                          AAGAACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICICIGAAGGACCICICAAGAAG 369
                                                                                                                                                                                                                                AAGAACATGGCTCCTGCCGACTCTGATGCCAAGCTCACGAGGGATCGCTCAAGACT 291
                                                                                                                                                                                                                                                               GCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACC 429
                                                                                                                                                                                                                                                                                                                                 GCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGAACCCGGCTTACTAAGAAGCTG 489
                                                                                                                                                                                                                                                                                                                                                                 credsrerecadodarendareddaredereddaracaacaececraecaadeacee
                                                                                                                                                                                                                                                                                                                                                                                                  GAAGTCACCACGACCCCAACCAGGACCCTCTGCTTACTCATTCCTATCATCGGAGTT 549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCT 609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    899
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             68 TCTCTAAGGAGATCATGACGTCCACCACCACCACCACCACCACCAGCCTACGTGAACACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           68 TCAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGATGCCCTGGAGCCCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 reardactedacactereceteceterecetaceetaceetaceardecetedageetraa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            188 TCAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGG
                                                                                                                                                                                                                                                                                    412 GAGATCGCCACCGCCAACCAGGATCCCCTTATCACTTTGACTCCCATCATTGGTCTT
               TCTAAGGAAATCATGATCCTTCACCACTCCAAGCACCATCAGACTTACGTCACCAACCTC
                                                              AACGCTGCCGAGGAGAGACTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGTT
                                                                                                                                TCCAAGGAGATCATGACCCTTCACCACACCACCACCATCAGACTTATGTTAACGGCCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gerrrengaacerecaacrrrecreageereageereagearrearecreererea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTCTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: TAKESAKO, KAZUTOH et al.
TITLE OF INVENTION: ANTIGENIC PROTEIN ORGINATING IN MALASSEZIA
FILE REPERENCE: 1422-0523P
CURRENT PAPLICATING NUMBER: US/10/109,670
CURRENT FILING DATE: 2002-04-01
NUMBER OF SEQ ID NOS: 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 728;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ch 37.7%; Score 252; DB 14; Length 7 il Similarity 65.5%; Pred. No. 1.2e-73; 385; Conservative 0; Mismatches 200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 3, Application US/10109670 Publication No. US20030105283A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA
ORGANISM: Malassezia furfur
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NAME/KEY: misc feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBERS
SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 3
US-10-109-670-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; US-10-109-670-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION:
 130
                                  61
                                                                   190
                                                                                                   121
                                                                                                                                                                                                    310
                                                                                                                                                                                                                                   232
                                                                                                                                                                                                                                                                    370
                                                                                                                                                                                                                                                                                                  292
                                                                                                                                                                                                                                                                                                                                     430
                                                                                                                                                                                                                                                                                                                                                                    352
                                                                                                                                                                                                                                                                                                                                                                                                     490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      550
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OTHER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                           g
                                                                  8
                                                                                                                             \dot{\circ}
                                                                                                                                                              g
                                                                                                                                                                                                  à
                                                                                                                                                                                                                            q
                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                               qq
                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                               qq
                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ωp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             USEFU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: HOSHINO,
APPLICANT: HOSHINO,
APPLICANT: OJIMA, Kazuyuki
APPLICANT: OJIMA, Kazuyuki
APPLICANT: SETOGUCHI, Yutaka
TITLE OF INVENTION: PROCESS FOR THE MANUFACTURE OF CAROTENOIDS AND BIOLOGICALLY
TITLE OF INVENTION: MATERIALS THERROF
FILE REFERENCE: C38435/111694
CURRENT APPLICATION NUMBER: US/09/727, 855B
CURRENT FILING DATE: 2000-12-01
NUMBER OF SEQ ID MOS: 17
SOFTWARE: Patentin version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129
                                                                                                                                                                                                                                                                                                                                                                                       540
                                                    240
                                                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  70 AGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 ATGCCTCCTTACACTCTTCCCGACCTTCCTTACGCTTACGATGCCTTGGAGCCTTACATC
                                                                                                                                                                                                                                                                                                                                                                                                                   AAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACTTCCTATC
CTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGGCCTTCAAGAAGAAGTTCAAC
                                                                                                                                                                                                                                                                                                                                            AAGAAGCTGGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Arcegaetreacarcreegaecacecrrrcracrrcagracaagacercaagcereac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTT
                                                                                   181 AACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTT
                                                                                                                    ACCCAGGITAAGCITCAGICICICICAAGITCAACGGAGGAGGACACAICAAICACICI
                                                                                                                                                       CIGITICIGGAAGAACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICICIGAAGGACCI
                                                                                                                                                                                                      CTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCT
                                                                                                                                                                                                                                                       CTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAAC
                                                                                                                                                                                                                                                                                                                     GCTGACACCGCTGCTGTCCAAGGATCCGGATGGGGCTTGGCTTGGCTTGAACCCCGCTTACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCCAGAGGCCCGATTGCAGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 о
О
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 597;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              47.3%; Score 316.6; DB 9;
ilarity 72.0%; Pred. No. 2.5e-95;
Conservative 0; Mismatches 159;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 6, Application US/09727855B Patent No. US20020168703A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Phaffia rhodozyma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCTCTCTAA 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCTCTCTAN 669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOCATION: (1)..(594)
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Matches 431; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 2
US-09-727-855B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-727-855B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 6
LENGTH: 597
                                                                                                                                                                                                                                                                                        361
                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                         421
                                                     181
                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                     ò
                                                                                 qq
                                                                                                                      ò
                                                                                                                                              д
                                                                                                                                                                            à
                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                             Op
                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                               g
```

```
LOCATION: (1). [(630)
OTHER INFORMATION: Strandedness:double-Topology:linear-Molecule Type:cDNA to mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTCGGCGAGATTGCGCAGCTGAACGCGATCAANTTCATCGCGGCGGTGGCCACATCAACCAC 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241 gageriececrecedearicalececeaerringeriegriegaegeerieaagaagarie 300
312 ACCTCGCGCCGACGAACAAGGGCGGCGGCGAGCTCGACTCGGGCGAGCTGCGCTCCGCGA 371
                                                        TCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACCGCTG 433
                                                                                                                                                                            434 CTGICCAAGGAICCGGAIGGGGCIGGCIIGGCIIGAACCCGCIIACIAAGAAGCIGGAAG 493
                                                                                                                                                                                                                                 TCACCACGACCGCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAGTTGACA 553
                                                                                                                                                                                                                                                                                                                                                        TCATCACGACCGCGAACCAGGACCCGCTCCTGTCGCACAAGCCGCTGATTGGCATCGATG 551
                                                                                                                                                                                                                                                                                                                                                                                                                    TCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGCTGCTG 613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         552 cenegeageacacecenteracenecagnacaacaacencaagecegachaceneaagecea 611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 TCGCTCTTCTGGAAGAACCTCGCGCCGACGAACAAGGGCGGCGGCGGCGAGCTCGACTCGGGC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            478 ACTAAGAAGCTGGAAGTCACCACGACGGCCAACCAGGACCCTCTGCTTACTCACATTCCT 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GICAACAACCIGAACGCCGCGGAGGACAAGCIGAICGACGCGCCICCCGCAGCAGAGCCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCGACCGCGACTTTGGCTCGGTCGACGCCATGAAGGAGAAGTTCAACGCGGCGCTCGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      118 GAGCCCTCCATCTCCAAGGAGATCATGACCTTCACCACCACCAAGCACCATCAGACTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 GAACCTGCTTTCTGGGGGGGGAGATAATGGAGACGCACTACGAGAAGCACCACCGCACCTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTTAACGGCCTCAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCTCTGTTCTGGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                358 CCTCTCAAGAAGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rchegaccergarcaacrrrgaegagecceagaaagcerrcrcaagaagececrc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGCTGCTCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 29, Application US/10109670
Publication No. US20030105283A1
GENERAL INFORMATION:
A PAPLICANT: TRESARO, KAZUTOH et al.
TITLE OF INVENTION: ANTIGENIC PROTEIN ORGINATING IN MALASSEZIA
FILE REFERENCE: 1422-0523P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Aatch 33.0%; Score 220.6; DB 14; Local Similarity 62.5%; Pred. No. 3.7e-63; les 343; Conservative 0; Mismatches 206;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/10/109,670 CURRENT FILING DATE: 2002-04-01 NUMBER OF SEQ ID NOS: 58 SEQ ID NO 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Malassezia furfur
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY: misc feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
US-10-109-670-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-109-670-29
                                                     374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         298
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                             494
                                                                                                                                                                                                                                                                                                                                                        492
                                                                                                                                                                                                                                                                                                                                                                                                                    554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    612
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loca
Matches
                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          \stackrel{>}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                     à
                                                                                                          D
                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              : LOCATION: (1). [812)
: OTHER INFORMATION: Strandedness:double-Topology:linear-Molecule Type:cDNA to mRNA US-10-109-670-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               373
                                                                                    247
                                                                                                                                                367
                                                                                                                                                                                                                                                                                                                            367
                                                                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        313
                                                                                                                                                                                     368 AGGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACA 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        485 GGGATGGCTGGGACCCCTGCTACCTGCAGTACAAGAACGACAAGGCTTCCTACCTTA 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               252 AGCTGAACGCGATCAAGTTCAACGGCGGTGGCCACATCAACCACTCGCTCTTCTGGAAGA 311
                         188 rccadcracagracarcaagricaacracagagagagagagagagaraacaacracagararr
                                                                                                                                                GGAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGA
                                                                                                                                                                                                                                                                                                                         AGGCCATCGAGCAGGAGTTCGGCGACTTTGAGAAGTTCAAGACGACCTTCAACACGAAGG
                                                                                                                                                                                                                                                                                                                                                                                     CCGCTGCTGTCCAAGGATCCGGATGGGGCTGGCTTGAACACCCGCTTACTAAGAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                368 CGGCCGGCATCCAGGGTTCGGGCTGGCTGTGGCTCGGTGTTGCCCCCG---ACGGGCAACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            488 TGGAAGTCACCACGACGCCAACCAGGACCCTCTGCTTACTCACATTCCTATCATCGGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    425 TCGACCTGGTCGTTGCCAAGGACCAGGACCCGCTCACGACGCACCACCCCGTCATTGGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                548 TTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ccaadracacecteccectrecceraceacracececectreadeceeceareree
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      134 AGGAGATCATGACCTTCACCACACCACCATCAGACTTATGTTAACGGCCTCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGCCGAGGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCCAGGTTAAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      192 ccecedadeacaacrearceacecrecrecaeacaeacececrecreceaearrecec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    254 ITCAGICIGCICICAAGITCAACGGAGGAGGACACAICAAICACICICIGITCIGGAAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        314 ACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAAGGCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 14; Length 812;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 608 CTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCCAGAGGCCCCGATTGC 655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         545 AGGCCTGGTGGAACTGGGCCCGAGGCCGAGAAGCGCTTCC 592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 4, Application US/10109670

Publication No. US20030105283A1

GENERAL INFORMATION:

APPLICANT: TAKESAKO, KAZUTOH et al.

APPLICANT: TAKESAKO, KAZUTOH et al.

APPLICANT: TAKESAKO, KAZUTOH et al.

APPLICANT: TAKESAKO, MAZUTOH et al.

APPLICANT: TAKESAKO, MAZUTOH et al.

APPLICANT: TAKESAKO, MAZUTOH et al.

APPLICANTON: ANTON:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Match 37.5%; Score 250.6; DB 14; Local Similarity 63.9%; Pred. No. 3.6e-73; es 379; Conservative 0; Mismatches 214;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA
ORGANISM: Malassezia furfur
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURE:
NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S:
Matches 379
                         248
                                                                                                                                             308
                                                                                                                                                                                                                                                                                                                         308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          194
                                                                                                                                                                                                                                                                                                                                                                                     428
                                                                                                                                                                                               d
                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                    ΩD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
```

g

ð

g ð d

δ

```
APPLICANT: La Rosa Thomas J
APPLICANT: La Rosa Thomas J
APPLICANT: Kovalic David K
APPLICANT: Zhou Yihua
APPLICANT: Cao Yongwei
TITLE DE INVENTION: Soy Nucleic Acid Molecules and Other Molecules Associated With
TITLE OF INVENTION: Plants and Uses Thereof for Plant Improvement
FILE REFERENCE: 38-21(53223)B
CURRENT APPLICATION NUMBER: US/10/424,599
CURRENT FILING DATE: 2003-04-28
NUMBER OF SEQ ID NOS: 285684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    257
   254 GAACGTCACCGAGGAGAAGTACCACGAGGCGCTGGCCAAGGGAGATGTTACAACTCAGGT 313
                                                                                                                                              314 recretrica ecreta carrica a respecta de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de contra de co
                                                                                                                                                                                                                           GAAGAACTIGGCICCCIAIGGAICCGAGGAGGCIACCCICTCIGAAGGACCICTCAAGAA 368
                                                                                                                                                                                                                                                                                                     374 GACAAACCTGAGCCCTAAGGGTGGTGGAGAACCCA-----AAGGAGAGTTGCTGGA 424
                                                                                                                                                                                                                                                                                                                                                                              GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                   425 gectarcaagcergactritggeterritgagaagritaaggaarggagacrgergerg 484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGCTGCTGTCCAAGGATCCGGATGGGGTTGGCTTGAACCCGCTTACTAAGAAGCT 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACAGATIGCCGCCTGCTCTAAICAGGACCCCACTGCAAGGAACCACAGGCTTTAIICCACT 604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA 599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gciggggailgaigigiggagcacgcitactaicticagtalaaaacgicagacciga 664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            806 grácacechaceceárergeariraceacrarecececacrecaeceaecearcaecees 747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GICTGCTCTCAAGTTCAACGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTT 317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      reregesacrecasecresecresecrisecrisecricasinasesaccasecre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC------TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCTCAACGCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCCAGGTTAAGCTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       746 cárcargeraciracaccacadadecaceaceacearcarcaceareracaacaage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  686 CCTCGAGCACTCCAAGACGCCATCGCCAAGAAAGATTCCTCCGCCGTCGTTAAGCTCCA
                                                                             GCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    626 desceccarcaaetreaaceeceaaestearereaacearricrarricresaaaaarer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 202.8; DB 12; Length
Pred. No. 4e-57;
0; Mismatches 212; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CIATCICGCIGCIGITIGGICCGIIAICAACIACAAGGAGG 640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  chárcigaaagccarridgaargraarcaacrigggagaard 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ), OTHER INFORMATION: Clone ID: PAT_MRT3847_52648C.1 US-10-424-599-90405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 90405, Application US/10424599 Publication No. US20040031072A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30.3%;
Best Local Similarity 61.1%;
Matches 352; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
ORGANISM: Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-424-599-90405/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 90405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       258
                                                                                 249
                                                                                                                                                                                                                               309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        198
                                                                                                                                                                                                                                                                                                                                                                                  369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH:
                                                                             à
                                                                                                                                              qq
                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           129 CTCCAAGGAGATCATGACCCTTCACCACACGAGCACCCATCAGACTTATGTTAACGGCCT 188
ACGCAGAAGCTCGACATCATCATCACGACGAACCAGGACCCGCTCCTGTCGCAAAGCCG 420
                                                                                                                                                                                             421 CTGATTGGCATCGATGCGTGGGAGCACGCGTACTACCTGCAGTACAAGAACGTCAAGGCC 480
                                                                                                                                                                                                                                                                                                                                           GACTACTICAAGGCGATCTGGACCGTGATCAACTITGAGGAGGCCGAGAAGCGTCTCANG 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             189 CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT 248
                                                                                                                                                                                                                                                                          GACTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGAGGCAGAGGCCCGATTGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              194 TAACGCGCAGATCATGCAGCTGCACACGAAGCAACCACGCGACCTACGTGAACAATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; OTHER INFORMATION: Genbank Accession No. US20020119462A1 NM_017051
US-09-917-800A-1627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 205; DB 9; Length 14
Pred. No. 8.6e-58;
0; Mismatches 200; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Porter, Mark
APPLICANT: Johnson, Kory
APPLICANT: Johnson, Kory
APPLICANT: Johnson, Kory
APPLICANT: Gastle, Aichael
APPLICANT: Gastle, Michael
APPLICANT: Gastle, Michael
APPLICANT: Gane Logic, Inc.
TITLE OF INVENTION: Molecular Toxicology Modeling
FILE REFERENCE: 44921-5038-US
CURRENT APPLICATION NUMBER: US/09/917,800A
CURRENT FILING DATE: 2001-07-31
PRIOR FILING DATE: 2000-07-31
PRIOR FILING DATE: 2000-11-02
PRIOR APPLICATION NUMBER: US 60/220,645
PRIOR FILING DATE: 2001-05-15
PRIOR FILING DATE: 2001-05-15
PRIOR FILING DATE: 2001-05-25
PRIOR FILING DATE: 2001-05-25
PRIOR FILING DATE: 2001-05-25
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-13
PRIOR PRILING DATE: 2001-06-19
PRIOR PRILING DATE: 2001-06-19
PRIOR PRILING DATE: 2001-06-19
PRIOR PRILING DATE: 2001-06-19
PRIOR PRILING DATE: 2001-07-09
PRIOR PRILING DATE: 2001-07-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1627, Application US/09917800A Patent No. US20020119462A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 62.5%;
Matches 363; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA ORGANISM: Rattus norvegicus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 1627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION: APPLICANT: Mendrick, Donna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 1740
                                                                                                                                                                                                                                                                                                                                                                                                                        GCTGCTCTC 666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAGGCGCTC 549
                                                  361
                                                                                                                       538
                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                        658
```

ઠે 셤 à d δ

```
APPLICANT: Olga Bandman
TITLE OF INVENTIONS, GENES DIFFERENTIALLY EXPRESSED IN VASCULAR TISSUB ACTIVATION
FITLE REFERENCE: PA-0028 US
CURRENT APPLICATION NUMBER: US/10/044,090
NUMBER OF SEQ ID NOS: 850
SOFTWARE: PERL PROGRAM
                                                                                                                                               1501 ACAGGGGTCTGGATGGGTGTGGCTTTGGTCTGGACAAAGAGTTGAAGAGGCTTGTAGTTGA 1560
                                                                                                                                                                                                                                                                                                                                                        1621 TATTGATGTTTGGGAGCATGCGTACTACTTACAGTACAAGAATGTTAGACCAGACTATCT 1680
                                               1441 CACACATTTTGGCTCTTTTGAAGCATTAGTACAAAAAGTTAATGCAGAAGGTGCTGCACT 1500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2
378 GGAAICTITIGGITCTITICGAGGCCTICAAGAAGAIGTICAACGCIGACACCGCTGCTGT 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               369 GGCTATCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      279 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT 338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         249 TAAGCTITCAGTCTGCTCTCAAGTICAACGGAGGAGGACACATCAATCACTCTCTGTTCTG 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    569
                                                                                                                                                                                                                                                   1561 AACCACTGCCAACCAGGACCCACTGGTTACTAAGGGACCAAATTTGGTTCCATTGCTTGG
                                                                                                  438 CCAAGGATCCGGATGGGCTGGCTTGGCTTGAACCCGCTTAAGAAGAGCTGGAAGTCAC
                                                                                                                                                                                                    ---CATTCCTATCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                159 CAGGCAGAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCTGGAACCTCACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               219 CAACGCGCAGATCATGCAGCTGCACCACCAGCACCACCACGCGCCTACGTGAACAACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        309 GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             399 GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    510 IGTIGGIGTCCAAGGCTCAGGITGGGGTTGGCTTGGTTTCAATAAGGAACGGGGACACTT
                                                                                                                                                                                                                                                                                                        546 AGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCTGACTATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    189 CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               450 AGCCATCAACGTGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 197.8; DB 13; Length
Pred. No. 1.9e-55;
0; Mismatches 217; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; NAME/KEY: misc feature
; OTHER INFORMATION: Incyte ID No. US20020137081A1 010001CB1
US-10-044-090-836
                                                                                                                                                                                                                                                                                                                                                                                                                                                          1681 GAAGAACATTTGGAAAGTTATTAATTGGAAATATGC 1716
                                                                                                                                                                                                                                                                                                                                                                                                          606 CGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGC 641
                                                                                                                                                                                                    498 CACGACCCCAACCAGGACCCTCTGCTTACTCA---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; Sequence 836, Application US/10044090; Publication No. US20020137081A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 29.6%;
Best Local Similarity 60.9%;
Matches 366; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-044-090-836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ ID NO 836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGIH:
                                       Dp
                                                                                                                                               g
                                                                                                                                                                                                                                         D
                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                음
                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                               8
                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: La Rosa Thomas J
APPLICANT: La Rosa Thomas J
APPLICANT: Cao Yongwei
TITLE OF INVENTION: Soy Nucleic Acid Molecules and Other Molecules Associated With
TITLE OF INVENTION: Plants and Uses Thereof for Plant Improvement
FILE REFERENCE: 38-21 (5323)B
CURRENT APPLICATION NUMBER: US/10/424,599
CURRENT FILING DATE: 2003-04-28
NUMBER OF SEQ ID NOS: 285684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .381 AGCTCCTGTTCGTGAAGGAGGTGGTGAACCACCCAAGGGTTCACTGGGATGGGCCATTGA 1440
                                                                                                                                                                                                                                                                                                                                                                                                                                  605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                257
                                                                          507
                                                                                                                         437
                                                                                                                                                                            447
                                                                                                                                                                                                                                                                              387
                                                                                                                                                                                                                                                                                                                                545
                                                                                                                                                                                                                                                                                                                                                                                327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    318 GGCTCCCTATGGATCCGAGGAGGCTACCCTCTGAAGGACCTCTCAAGAAGGCTATCGA 377
                       377
                                                                                                                                                                                                                         438 CCAAGGATCCGGATGGGCTGGCTTGGCTTGAACCCGCTTACTAAGAAGCTGGAAGTCAC 497
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               326 TATTGATGTTTGGGAGCATGCGTACTACTTACAGTACAAGAATGTTAGACCAGACTATCT 267
                     318 GGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAGGCTATCGA
                                                                    566 AGCTCCTGTTCGTGAAGGAGGTGGTGAACCACCCAAGGGTTCACTGGGATGGGCTATTGA
                                                                                                                       378 GGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACACGCTGCTGT
                                                                                                                                                                    506 CACACATITITGGITCITITGAAGCATTAATACAAAAAGTTAACGCAGAAGGTGCTGCACT
                                                                                                                                                                                                                                                                           446 ACAGGGGTCTGGATGGGTGTGGCTTGGTCTGGACAAAGAGTTGAAGAGGCTTGTAGTTGA
                                                                                                                                                                                                                                                                                                                             CACGACCGCCAACCAGGACCCTCTGCTTACTCA-------CATTCCTATCGG
                                                                                                                                                                                                                                                                                                                                                                             546 AGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78 GCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            138 GATCATGACCCTTCACCACACCACCACCATCAGACTTATGTTAACGGCCTCAACGCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1201 BATCATGCAGCTGCACACAGCACCACAGCACTTACATCACCAACTTCAAGACAAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGTTAAGCTTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .261 cercéacereceasacicecicacaacacacaacaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTCTGCTCTCAAGTTCAACGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1321 GGGCGCCATCAAGTTCAACGGCGGAGGTCACGTCAACCATTCTATTTTCTGGAAAAATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 29.8%; Score 199.6; DB 12; Length 2217; Best Local Similarity 60.8%; Pred. No. 6.5e-56; Matches 350; Conservative 0; Mismatches 214; Indels 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 506 CGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGC 641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    266 TAAGAACATÍTIGGAAAGÍTÁTTÁATÍTGGÁAATÁTGC 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OTHER INFORMATION: Clone ID: PAT_MRT3847_52646C.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 90403, Application US/10424599
Publication No. US20040031072A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA ORGANISM: Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 8
US-10-424-599-90403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-424-599-90403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 90403
LENGTH: 2217
                                                                                                                                                                                                                                                                                                                             498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                              Db
                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                    à
                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            q
```

CACATTCCTAT

629

```
APPLICANT: Young, Paul
TITLE OF INVENTION: Process for Identifying Anti-Cancer Therapeutic Agents Using Canc
TITLE OF INVENTION: Sets
FILE REFERENCE: 689290-76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   70 CAGGCAGAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCTGGAACCTCACAT 129
                                                                                                                                                                       gerocedaricarererededededecretraciacerreagranaaaarereageeerea 686
                                                                                                                                                                                                                                                         687 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAACGCTGCCGAGGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT 248
507 IGTIGGIGICCAAGGCICAAGGIIGGGGIIGGCIIGGIIICAAIAAGGAACGGGACACII 566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190 GAACGICACCAGGAGAGIACCAGGAGGCGIIGGCCAAGGGAGAIGIIACAGCCCAGAI
                                                                                   acadarirecrecrrerecadaricadearecrecadeaneaneaneagecrrarrecaer
                                                                                                                                                                                                                 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGAGGCCAGAGGCCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                             540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                              GGAAGTCACCACGACCCAACCAGGACCCTCTGCTTACT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 197.8; DB 9;
Pred. No. 1.9e-55;
0; Mismatches 217;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT FILING DATE: 2001-09-18
PRIOR APPLICATION NUMBER: US/60/233,617
PRIOR PILING DATE: 2000-09-18
PRIOR PILING DATE: 2000-09-20
PRIOR PILING DATE: 2000-09-25
PRIOR APPLICATION NUMBER: US/60/234,923
PRIOR PILING DATE: 2000-09-25
PRIOR PILING DATE: 2000-09-25
PRIOR PILING DATE: 2000-09-25
PRIOR PILING DATE: 2000-09-26
PRIOR PILING DATE: 2000-09-26
PRIOR PILING DATE: 2000-09-26
PRIOR PILING DATE: 2000-09-26
PRIOR PILING DATE: 2000-09-26
PRIOR APPLICATION NUMBER: US/60/235,638
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
PRIOR PILING DATE: 2000-09-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/09/954,456
CURRENT FILING DATE: 2001-09-18
                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1822, Application US/09954456 Patent No. US20220115057A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          29.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                   T 660
                                                                                                                                                                                                                                                                                                                                           T 747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              , ORGANISM: Homo
US-09-954-456-1822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 1822
LENGTH: 1026
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    366;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 189
                                              489
                                                                                        567
                                                                                                                                                                       627
                                                                                                                                                                                                                 009
                                                                                                                                                                                                                                                                                                     099
                                                                                                                                                                                                                                                                                                                                           747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: DNA
                                         ð
                                                                                   qq
                                                                                                                             δ
                                                                                                                                                                   g
                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                       qq
                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 248
                                                                                                                                                                                                629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        335
                                                                                                                                                                                                                                       749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             506
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             129 CTCCAAGGAGATCATGACCCTTCACCACAAGCACCCATCAGACTTATGTTAACGGCCT 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        309 GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Wang, Youzhen
APPLICANT: Wang, Youzhen
APPLICANT: Steinmann, Kathlen
APPLICANT: Steinmann, Kathlen
TITLE OF INVENTION: FOR IDENTIFICATION, ASSESSMENT, PREVENTION, AND
TITLE OF INVENTION: THERAPY OF BREAST CANCER
FILE REFERENCE: MRI-049
CURRENT FILING ANTE: 2002-07-18
FRICK APPLICATION NUMBER: 60/306,220
PRIOR PILING DATE: 2001-07-18
NUMBER OF SEQ ID NOS: 14084
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 13503
LENGTH: 996
                                                                                                                                                                                                CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      276 GAACGICACCGAGGAGAAGIACCAGGAGCGIIGGCCAAGGGAGAIGIIACAGCCCAGAI
                          ---CACATTCCTAT
                                                                  570 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                              CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                      gengegegarreneresegaceaceernacracerreneraraaaareneaeeersea
                                                                                                                                                                                                                                       690 TIATCTAAAAGCTATTIGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              156 CAGGCAGAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCCTGGAACCTCACAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  216 caacececacarcarecaecrecacacaecaecaecaecaecececeraecreaecer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 189 CAACGCTGCCGAGGAGGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         447 adecancaacergacrinidenicchindacaagintaadgadaadgudacgecideard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           489 GGAAGTCACCACGACGCCAACCAGGACCCTCTGCTTACT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. 1.9e-55;
0; Mismatches 217;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            396 GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29.6%; Score 197.8; 60.9%; Pred. No. 1.9
                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 13503, Application US/10198846 Publication No. US20030099974A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   366; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION: APPLICANT: Lillie, James
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                               T 660
                                                                                                                                                                                                                                                                                                                         T 750
                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
US-10-198-846-13503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ÚS-10-198-846-13503
                                                                                                              540
                                                                                                                                                      630
                                                                                                                                                                                                009
                                                                                                                                                                                                                                                                                 099
                                                                                                                                                                                                                                                                                                                         750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loca
Matches
                                                                a
                                                                                                            δ
                                                                                                                                                   g
                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                               δλ
                                                                                                                                                                                                                                                                                                                     d
```

249

128

Gaps

18;

Length 1026; Indels 188

308 309 420

480

599 900 629

```
GGCTATCGAGGAATCTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC 428
                                                                                                                                                                                                                                                                                                                                                                                                                                 429 CGCTGCTGTCCAAGGATCCGGATGGGCTTGGCTTGAACCCGCTTACTAAGAAGCT 488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC------TTACTCACATTCCTAT 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Linsley, Peter S.
APPLICANT: Linsley, Peter S.
APPLICANT: Mao, Mao
APPLICANT: Roberts, Christopher J.
APPLICANT: Roberts, Christopher J.
APPLICANT: Van 't Veer, Laura Johanna
APPLICANT: Van de Vijver, Marc J.
APPLICANT: Van de Vijver, Marc J.
APPLICANT: Bernards, Rene
TILE REFERENCE: 9301-188-999
CURRENT APPLICANTON NUMBER: US/10/342,887
CURRENT FILING DATE: 2003-01-15
PRIOR APPLICANTON NUMBER: 60/298,918
PRIOR APPLICANTON NUMBER: 60/298,918
PRIOR FILING DATE: 2002-06-14
PRIOR FILING DATE: 2002-06-14
PRIOR FILING DATE: 2002-06-14
PRIOR FILING DATE: 2002-06-14
NUMBER OF SEQ ID NOS: 2699
SEQ ID NO 1905
                                                                                                                 190 GAACGTCACCGAGGAGGAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                       GAAGAACTIGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                             GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                     361 AGCCATCAAACTGGACTTTGGTTCCTTTGACAAGTTTAAGGAGGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421 TGTTGGTGTCCAAGGCTCAGGTTGGGTTGGCTTGGTTTCAATAAGGAACGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481 ACAAATIGCIGCIIGICCAAAICAGGAICCACIGCAAGGAACAACAGGCCIIAIICCACI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541 GCTGGGGATTGATGTGTGGGGAGCACCTTACTACTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    600 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                             CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1026;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 197.8; DB 12; Length Pred. No. 1.9e-55; 0; Mismatches 217; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Dai, Hongyue
APPLICANT: He, Yudong
APPLICANT: Linsley, Peter S.
APPLICANT: Mao, Mao, Moo, Moo
APPLICANT: Roberts, Christopher J.
APPLICANT: Van 't Veer, Laura Johanna
APPLICANT: Van de Vijver, Marc J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 29.6%;
Best Local Similarity 60.9%;
Matches 366; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1905, Application US/
Publication No. US20040058340A
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: Homo sapiens
US-10-342-887-1905
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      T 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-342-887-1905
                                                                       189
                                                                                                                                                                                                                                                   309
                                                                                                                                                                                                                                                                                               310
                                                                                                                                                                                                                                                                                                                                           369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
                                                                       ð
                                                                                                               g
                                                                                                                                                               à
                                                                                                                                                                                                Db
                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                              음
                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7
                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                    488
                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  70 cagecagaagcacciccccaccigccracacciacgacciacgccccciggaaccicacai 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              129 CTCCAAGGAGATCATGACCCTTCACCACCAAGCACCATCAGACTTATGTTAACGGCCT 188
                                                                                                                                                                                                           428
                                                                                                                                                                                                                                                                                                                                           480
                                                                     APPLICANT: Van t Veer, Laura Johanna
APPLICANT: Van de Vijver, Marc J.
APPLICANT: Van de Vijver, Marc J.
APPLICANT: Van de Vijver, Marc J.
APPLICANT: Wan de Vijver, Marc J.
APPLICANT: Bernards, Renc J.
TITLE OF INVENTION: Diagnosis and Prognosis of Breast Cancer Patients
FILE REFERENCE: 9301-188-999
CURRENT APPLICATION NUMBER: US/10/342,887
CURRENT APPLICATION NUMBER: 60/298,918
PRIOR APPLICATION NUMBER: 60/298,918
PRIOR PILING DATE: 2001-06-18
PRIOR FILING DATE: 2002-06-14
PRIOR FILING DATE: 2002-06-14
NUMBER OF SEQ ID NOS: 2699
                                                                                                                                                                                                         GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                              GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                       ----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                 481 ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAGGCCTTATTCCACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541 GCTGGGGATTGATGTGTGGGGGGCACGCTTACTACCTTCAGTATAAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69 CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                                                                                             310 GACBAACTCAGCCCTBACGGTGGTGGAGAACCCA-----AAGGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                     361 AGCCATCAAACTGGACTTTGGTTCCTTTGACAAGTTTAAGGAGAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                 421 TGTTGGTGTCCAAGGCTCAGGTTGGGGTTGGCTTTCAATAAGGAACGGGACACTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CHATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 12; Length 1026;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 197.8; DB 12;
Pred. No. 1.9e-55;
0; Mismatches 217;
                                                                                                                                                                                                                                                                                                                                                                                       489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 509, Application US/10342887
Publication No. US20040058340A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
APPLICANT: Dai, Hongyue
APPLICANT: He, Yudong
APPLICANT: Linsley, Peter S.
APPLICANT: Mao, Mao
APPLICANT: Roberts, Christopher J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 60.9%;
Matches 366; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    T 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-342-887-509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 509
                                                                                                                                                                                                           369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                    429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       199
                                                                                                                   309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                                 qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                   à
                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                    - g
                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                       임
```

2,

274 188 334 248 394 308 454

368 505 428 565 488 625 539 685 599

g ò a S g

à

qq

2 6 6 6

oy op ò 엄 ð Ω 셤

 δ a

ð

```
35 GAACGTCACCGAGGAGAAGTACCAGGAGGCGTTGGCCAAGGGAGATGTTACAGCCCAGAT
                                                                                                                                                                                                                                                                                                                                                       746 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                          caacececagarcarecaecrecacacacaaecaecacecececeracereaeca
                                                                                                                                                                                                                                                                                                                                                                                                  GAAGAACTTGGCTCCCTATGGATCCGAGGGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                            455 GACAAACCTCAGCCCTAACGGTGGTGGAGAACCCA-----AAGGGGAGTTGCTGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        369 GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   506 AGCCATCAAACGTGACTTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----CACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540 CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   686 geredegaritekrereredegageacerraciaeerregrarakaakarerekee
                                           CAGGGCAAAGCATACCCTGCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                                                     CAGGCAGAAGCACAGCCTCCCCGACCTGCCCTACGACTACGGCGCCCTGGAACCTCACAT
                                                                                                                                CTCCAAGGAGATCATGACCCTTCACCACACCCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                                                      CAACGCTGCCGAGGAGGTACTCGGCCGCTGTGGGCAAGGAGGATGTGCCTTACCCAGGT
                                                                                                                                                                                                                                                                                                           249 TAAGCTICAGTCTGCTCTCAAGTICAACGAGGAGGAGGACACATCAATCACTCTCTGTTCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 566 rérrigererccaagercagerrigegrrigecrirgerricaaraagaacgegacacrr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           626 acaaarrgcrgcrrgrccaaarcaggarccacrgcaaggaagaacaaggccrrarrccacr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGGAGGCAGAGGCCCCGATTGCAGGC
Gaps
18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Raines, Tracy M.
APPLICANT: Raines, Tracy M.
APPLICANT: Raines, Tracy M.
APPLICANT: Raines, Tracy M.
APPLICANT: Rameska, Joshua G.
APPLICANT: Matthew, Abraham V.
APPLICANT: Matthew, Abraham V.
APPLICANT: Ledcrad, Brooke L.
APPLICANT: Garcia, Carlos A.
APPLICANT: Garcia, Carlos A.
APPLICANT: Kricker, Maja
APPLICANT: Kricker, Maja
APPLICANT: Slader, Ted
APPLICANT: Allen, Keith R.
APPLICANT: Allen, Keith R.
APPLICANT: Allen, Keith R.
APPLICANT: Hurban, Neil
APPLICANT: Hurban, Patrick
TITLE OF INVENTION: Patrick
TITLE OF INVENTION: thaliana
Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    489 GGAAGTCACCACGACCGCCAACCAGGACCCTCTGCTTACT---
217;
Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 745, Application US/09770445
Patent No. US2002023281A1
GENERAL INFORMATION:
APPLICANT: Gorlach, Jorn
APPLICANT: An, Yong-Qiang
APPLICANT: Hamilton, Carol M.
0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Σ'n
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    660 T 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                806 T 806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-770-445-745
366;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 009
                                                                                                                                                                          275
                                                                                                                                                                                                                      189
                                                                                                                                                                                                                                                                                                                                                    395
                                         69
                                                                                                                              129
                                                                                     215
                                                                                                                                                                                                                                                                                                                                                                                                  309
Matches
                                                                              g
                                                                                                                                                                   dd
                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                             qq
                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                           à
                                                                                                                              ð
                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      qq
                                                                                                                                                       189
                                                                                                                                                                                                                                                                                                                                                                              368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         540
                       128
                                                                                                                                                                                                                                                                                                                                  309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   999
                                                                                                                                          CAACGCGCAGATCATGCAGCTGCACACAGCAAGCACCACGCGCCCTACGTGAACCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACAAATTGCTGCTTGTCCAAATCAGGATCCACTGCAAGGAACAACAACAGGCCTTATTCCACT
                    CAGGGCAAAGCATACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCAT
                                                         CTCCAAGGAGATCATGACCCTTCACCACACCAAGCACCATCAGACTTATGTTAACGGCCT
                                                                                                                                                                                               CAACGCTGCCGAGGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTACCCAGGT
                                                                                                                                                                                                                                      1.90 gaacgreaccgaggaggaggaccaggaggcgriggccaaggaggagargracagcccagar
                                                                                                                                                                                                                                                                                      250 AGCICTICAGCCIGCACIGAAGIICAAIGGIGGIGGICAIAÍCAAICAIAGCAITITICIG
                                                                                                                                                                                                                                                                                                                                                                         GAAGAACTTGGCTCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAA
                                                                                                                                                                                                                                                                                                                                                                                                                   310 GACAAACCICAGCCCIAACGGIGGIGGAGAACCCA-----AAGGGGGAGIIGCIGGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGCTATCGAGGAATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGAAGTTCAACGCTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361 AGCCATCAAACTGGACTTTGGTTCCTTTGACAAGTTTAAGGAGAAGCTGACGGCTGCATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rdridererekakéereakérrakérrakérrakérricaaraaksaacsasakerr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGAAGTCACCACGACCACCAGGACCCTCTGC-----TTACTCACATTCCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CATCGGAGTTGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCTGGGGATTGATGTGTGTGGGAGCACGCTTACTACCTTCAGTATAAAATGTCAGGCCTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTATCTCGCTGCTGTTTGGTCCGTTATCAACTACAAGAGGCAGAGGCCCGATTGCAGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 601 TTATCTAAAAGCTATTTGGAATGTAATCAACTGGGAGAATGTAACTGAAAGATACATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Lillie, James
APPLICANT: Xu, Yongyao
APPLICANT: Wang, Youzhen
APPLICANT: Wang, Youzhen
APPLICANT: Steinmann, Kathleen
TITLE OF INVENTION: NOVEL GENES, COMPOSITIONS, KITS, AND METHODS
TITLE OF INVENTION: THERAPY OF BREAST CANCER
FILE REFERENCE: MRI-049
CURRENT APPLICATION NUMBER: US/10/198,846
CURRENT PILLING DATE: 2002-07-18
PRIOR APPLICATION NUMBER: 60/306,220
PRIOR FILLING DATE: 2001-07-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 197.8; DB 14; Length 2825; Pred. No. 2.9e-55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 14084
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; Sequence 13787, Application US/10198846; Publication No. US20030099974A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; TYPE: DNA
; ORGANISM: Homo :
US-10-198-846-13787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-198-846-13787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 13787
LENGTH: 2825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      - 🛏
                                                                                                                                                   130
                                                                                                                                                                                               189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                           70
                                                                                                         129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        429
                                                                                                                                                                                                                                                                                                                                                                           60g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
```

745

805

```
1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  81 TACCCTGCCTGAGCTTCCTTACGCTTACGATGCCCTGGAGCCCTCCATCTCCAAGGAGAT 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TACGCTTCCTGATCTTCCTTACGATTATGGCGCATTGGAACCGGCCATTAGTGGAGAT 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     201 GGAGAGCTACTCGGCCGCTGTGGGCAAGGAGGATGTGCTTTACCCAGGTTAAGCTTCAGTC 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             320
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              230 CGCCATCAAATTCAACGGCGGAGGTCATGTCAACCATTCGATTTCTGGAAGAACCTTGC 289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TCCCTATGGATCCGAGGAGGCTACCCTCTCTGAAGGACCTCTCAAGAAGGCTATCGAGGA 380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             290 recriceastraaastrastraastraaceastaaaastraateerkerastraateeta 349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                381 ATCTTTTGGTTCTTTCGAGGCCTTCAAGAAGATTCAACGCTGACACCGCTGCTGTCCA 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         350 reactritéderidectrichandereridanahahahahahahahadargeridekadideh 409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           549 TGACATCTGGGAGCACGCTTTCTACCTTCAGTACAAGAACGTCAAGCCTGACTATCTCGC 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               530 AGATGITIGGGAGCACGCCIACIACTIGCAGIACAAAAAIGIGAGGCCIGAGIAICIGAA 589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CATGACCCTTCACCACACCACCACCATCAGACTTATGTTAACGGCCTCAACGCTGCCGA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  110 CATGCAGATTCATCACCAGAAGCATCACCAGGCTTATGTTACTAATTACAATAATGCTCT 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          170 réaccacerrearcasocrereacascases de reconstructor de reconstructor de la constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della constructor della construc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    441 AGGATCCGGATGGGGCTGGCTTGCTTGAACCCGCTTACTAAGAAGCTGGAAGTCACCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 410 AGGCTCAGGATGGGTGTGGCTCGGACTAGACAAGAACTGAAGAAGCTAGTTGTTGACAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --CATTCCTATCGGAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        261 TGCTCTCAAGTTCAACGGAGGAGGACACATCAATCACTCTCTGTTCTGGAAGAACTTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 28.1%; Score 188; DB 9; Length 817; Best Local Similarity 59.6%; Pred. No. 3.3e-52; Matches 342; Conservative 0; Mismatches 220; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  609 IGCIGITIGGICCGITAICAACIACAAGAGGCA 642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                590 GAATGTATGGAAAGTGATCAACTGGAAATATGCA 623
FILE REFERENCE: 2023US (PARA-012PRV)
CURRENT APPLICATION NUMBER: US/09/770,445
CURRENT FILING DATE: 2001-01-26
PRIOR APPLICATION NUMBER: US 60/178,472
PRIOR FILING DATE: 2000-01-27
NUMBER OF SEQ ID NOS: 999
SOFTWARE: FASESEQ FOR WINDOWS VERSION 4.0
SSOFTWARE: PASESEQ FOR WINDOWS VERSION 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    501 GACCGCCAACCAGGACCCTCTGCTTACTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA; TYPE: DNA; ORGANISM: Arabidopsis thaliana US-09-770-445-745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             \stackrel{>}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
```

Search completed: April 1, 2004, 14:11:04 Job time: 253.318 secs

This Page Blank (uspto)

```
The present sequence represents a specifically claimed antigenic protein isolated from the fungus Malassezia. The antigenic protein can bind to IGE antibodies present in patients with allergic conditions. Antigenic proteins, peptides and nucleic acids from the fungus Malassezia can be used in the diagnosis, treatment and prevention of allergic conditions due to Malassezia organisms (such as M.furfur, M. sympodials and M.pachydermatitis). (Updated on 27-AUG-2003 to correct OS field.)
                                                                                                                                                                                                                                                                                                                                              allergy; antigen.
                                                                                                                                                                                                                                                                                                                                                                                                                       10-DEC-1996;
                                                                                                                                                                                                                                                                                                                                                                                    WO9721817-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                           12-DEC-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             05-SEP-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   05-SEP-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Takesako K,
                                                                                                                                                                                                                                                                                      27-AUG-2003
23-FEB-1998
                                                                                                                                                                                                                                                                                                                                                                                                     19-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                Malassezia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Akiyama K,
                                                                                                                                                                                                                                                                    AAW29771;
                                                                                                                                                                                                                               RESULT 1
                                                                                                                                                                                                                                         AAW2977]
                                                                                                                                                                                                                                                           Human man
Q143N mod
Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human man
Human mSO
Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human nat
Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   man
man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Amino aci
MnSOD cDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                Aaw29771 Malassezi
Aaw29770 Malassezi
Add45869 Rat Prote
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A modifie
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Recombina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human man
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human nat
                                                                (without alignments)
1045.426 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human
Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Human
                                                                                                              1 MSVRASLSSVSRQTFVAPAA.......AAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                                                                 Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Aab08204 | Aar44801 | Aar90713 | Aaw00018 |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Aaw96317
Aaw82446
Aaw98172
Aab08206
Aaw98176
Abb79798
Abb79798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Aaw98169
Aaw98175
Aap71701
Aaw00453
Aaw00453
Aaw98171
Aaw98173
Aab08205
                                                      March 30, 2004, 17:09:18; Search time 60 Seconds
                                                                                                                                                                                1586107
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                              hits satisfying chosen parameters:
                                                                                                                                                             1586107 segs, 282547505 residues
                                                                                                                                                                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                    - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAW00018
AAW98169
AAW98175
AAP71701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAP80551
AAW00453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAW98174
AAW98173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAW98170
AAB08204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADD45869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAR44801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAR90713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAW98171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB08205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABB07330
                                                                                                                                          Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                            geneseqp2000s:
geneseqp2001s:*
geneseqp2002s:*
geneseqp2003as:*
geneseqp2003as:*
                                                                                                                                                                                                                                                                   A_Geneseq_29Jan04:*
                                                                                                                                                                                                                                                                           geneseqp1980s:*
geneseqp1990s:*
                                                                                                                                                                                                                                                                                                                                             geneseqp2004s:*
                                                                                                                                                                                                Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                             US-09-727-855B-5
                                                                                                                                                                                                                                                                                                                                                                                                                               Length DB
                                                                                                                                 BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                   Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             oŧ
                                                                                             Fitle:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       623
621
621
621
621
620
619
619
618
618
618
618
                                                                                                                                 Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             623
                                                                                                                                                                               Total number
                                    OM protein
                                                                                                                                                                                                                                                                  Database :
                                                                                                                                                             Searched:
                                                                                                               Sequence:
                                                       Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Result
                                                                                                                                                                                                                                                                                                                                                                                                                               No.
```

Aar75193 Human man	Aaw98177 Human man	Aar60359 MnSOD N-t	Aap80602 Sequence		Aar20015 Mn-SOD (I	Aar60360 MHS:MnSOD	Aay55846 Human man	Aay55849 Human man	Aap80603 Sequence	Aar75192 Human man	Aag23781 Arabidops	Aag53200 Arabidops	Aar60361 MHS2:MnS0	Abb64067 Drosophil	Aar05542 MnSOD (su	Aar05826 Manganese	Aaw61476 A. fumiga	Aar05825 Manganese	Aar05543 MnSOD (su
AAR75193	AAW98177	AAR60359	AAP80602	AAR75191	AAR20015	AAR60360	AAY55846	AAY55849	AAP80603	AAR75192	AAG23781	AAG53200	AAR60361	ABB64067	AAR05542	AAR05826	AAW61476	AAR05825	AAR05543
7	7	7	Н	0	~	7	3	m	Н	0	3	m	N	4	~	7	~	N	71
222	222	σ	198	198	199	199	198	226	198	198	231	231	199	217	228	228		265	265
53.3	53.3	53.1	52.9	52.9	52.8	52.7	52.6	52.6	52.6	52.6	52.6	52.6	52.2	52.0	51.3	51.1	50.7	50.3	50.3
614	614	612	610	610	609	608	607	607	909	909	909	909	602	009	592	589	584.5	580	280
56		28	29	30	31	32	33	34	35	36	37	38	99	40	41	42	43	44	45

ALIGNMENTS

```
Antigenic proteins from the fungus Malassezia - bind to IgE antibodies present in patients with Malassezia allergies, useful for diagnosis, treatment and prevention of such conditions.
                                                                                                                                                                                                Malassezia; fungus; antigenic; human; IgE; immunoglobulin E; antibody;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Onishi Y, Kato I;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kuroda M,
                                                                                                                                                      Malassezia fungus MF-4 antigenic protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 38; Page 85-86; 162pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Yagihara T,
Yamaguchi H;
    Ą
AAW29771 standard; protein; 224
                                                                                                                                                                                                                                                                                                                                                                                                                                         95JP-00346627.
96JP-00257612.
96JP-00257613.
                                                                                                                                                                                                                                                                                                                                                                                                  96WO-JP003602.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (TAKI ) TAKARA SHUZO CO LTD
                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    т,
н,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Okado T,
Yasueda F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 1997-332788/30.
N-PSDB; AAT85877.
```

Length 206;

142

62

202

Sequence 224

õ

Query Mat.ch

Local Matches

128;

67 99

ò

g

187

δ

g

à

```
or human polymucleotides or a polymucleotide which represents a fragment, derivative or allelic variation of the nucleic acid sequence. Also colaimed are a vector comprising the novel polymucleotide, a host cell comprising the vector, a method for identifying a nucleotide sequence which is differentially regulated in an animal subjected to pain and a kit to perform the method, an array, a method for identifying an agent that increases or decreases the expression of the polymucleotide sequence that increases or decreases in neuronal tissue of a first animal subjected to pain, a method for identifying a compound which regulates the expression of a polymucleotide sequence which is differentially expressed in neuronal tissue of a first animal subjected to pain, a method for identifying a compound that regulates the activity of one or more of the polymucleotides, a method for producing a pharmaceutical composition, a
                                                                                                                                                                                   123 AAGIQGSGWLWLGVAP-TGNLDLVVAKDQDFLTTHHPVIGWDGWEHAWYLQYKNDKASYL 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The invention discloses a composition comprising two or more isolated rat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    two or more isolated polypeptides, useful for treating pain in an animal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rat; pain; neuronal tissue; gene therapy; spinal segmental nerve injury; chronic constriction injury; CCI; spared nerve injury; SNI; Chung.
                                                                                                                                                        VKLOSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNAD
                                                                                                     TAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDYL
                                                                          23 IRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQ
DB 2;
58.0%; Score 668.5; DB 2 63.1%; Pred. No. 1.7e-63; ive 24; Mismatches 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Costigan M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rat Protein CAA39937, SEQ ID NO 11539.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADD45869 standard; protein; 222 AA.
                                     24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Befort K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 1; Page; 1017pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14-AUG-2001; 2001US-0312147P.
01-NOV-2001; 2001US-0346382P.
26-NOV-2001; 2001US-033347P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14-AUG-2002; 2002WO-US025765.
                                                                                                                                                                                                                                                                                                                                          217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New composition comprising preparing a medicament for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (GEHO ) GEN HOSPITAL CORP. (FARB ) BAYER AG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                    Best Local Similarity 63.1
Matches 123; Conservative
                                                                                                                                                                                                                                                                                                                   AAVWSVINYKEAEAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               D'urso D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2003-268312/26.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rattus norvegicus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENBANK; CAA39937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO2003016475-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29-JAN-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27-FEB-2003.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Woolf C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADD45869;
                                                                                                                                                            83
                                                                                                                                                                                                                                         143
                                                                                                                                                                                                                                                                                                                     203
                                                                                                                     m
                                                                                                                                                                                                63
  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                           ADD45869
                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                        g
                                                                                ģ
                                                                                                                                                          \delta
                                                                                                                                                                                                                                       à
                                                                                  ij
                                                                                                                                                                                                    126
                                                                                                                                                                                                                                           EDKLIDALPQQSPLGEIAQLNAIKFNGGGHINHSLFWKNLAPTNKGGGELDSGELRSAID 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present sequence represents a specifically claimed antigenic protein isolated from the fungus Malassezia. The antigenic protein can bind to IGE antibodies present in patients with allergic conditions. Antigenic proteins, peptides and nucleic acids from the fungus Malassezia can be used in the diagnosis, treatment and prevention of allergic conditions due to Malassezia organisms (such as M.furfur, M. sympodialis and M.pachydermatitis). (Updated on 27-AUG-2003 to correct OS field.)
                                                                                                                                                            65
                                                                                                                         99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Antigenic proteins from the fungus Malassezia - bind to IgE antibodies present in patients with Malassezia allergies, useful for diagnosis, treatment and prevention of such conditions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Malassezia; fungus; antigenic; human; IgE; immunoglobulin E; antibody;
                                                                                                                                                11 SRQTFVAP----AAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAA
                                                                                                                                                                                                    EESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIE
                                                                                                                                                                                                                                                                                ESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kato I;
                                         Length 224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Onishi Y,
                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                              EHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                 60.0%; Score 692; DB 2; 59.3%; Pred. No. 5.4e-66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kuroda M,
                                                                                  31; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Malassezia fungus MF-3 antigenic protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 36; Page 83-84; 162pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Yagihara T, I
Yamaguchi H;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW29770 standard; protein; 206 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                96WO-JP003602.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     95JP-00346627.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            96JP-00257613.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (TAKI ) TAKARA SHUZO CO LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Okado T,
Yasueda H,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yasueda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1997-332788/30.
                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AAT85876.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           allergy; antigen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 206 AA;
        AA;
```

12-DEC-1995; 05-SEP-1996; 05-SEP-1996;

Takesako K,

Akiyama K,

10-DEC-1996;

19-JUN-1997.

WO9721817-A1

Malassezia.

27-AUG-2003 23-FEB-1998

AAW29770;

AAW29770 RESULT

```
4;
method for identifying a compound or small molecule that regulates the activity in an animal of one or more of the polypeptides given in the specification, a method for identifying a compound useful in treating pain and a pharmaceutical composition comprising the one or more polypeptides or their antibodies. The polynuclectide or the compound that modulates its activity is useful for preparing a medicament for treating pain (e.g. spinal segmental nerve injury (Chung), chronic constriction injury (CCI) and spared nerve injury (SNI) in an animal (e.g. gene therapy). The sequence presented is a rat protein (shown in Table 2 of the sequence data for this patent did not form part of the printed specification, but was obtained in electronic form directly from WIPO at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                            59 YVNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSE 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                          GPLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---L 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                58 YVNNLNVTEEKYHEALAKGDVTTQVALQPALKFNGGGHINHSIFWTNLSPKGGGE---PK 114
                                                                                                                                                                                                                                                                                                                                                           57
                                                                                                                                                                                                                                                                                                                                               1 MLCRAACSAGRR---LGPAASTAGSRHKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAT
                                                                                                                                                                                                                                                                                                                           1 MSVRASLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQT
                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Superoxide dismutase; MnSOD; SOD; human; protein engineering; enzyme engineering; antioxidant; antiinflammatory; cytotoxicity; inflammation; reperfusion injury; therapy.
                                                                                                                                                                                                                                                                                             11;
                                                                                                                                                                                                                                                               Length 222;
                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        176 THIPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEAR 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GLIPLLGIDVWEHAYYLQYKUVRPDYLKAIWNVINWENVSQR
                                                                                                                                                                                                                                                               DB 7;
                                                                                                                                                                                                                                                             55.0%; Score 634.5; DB 7;
ilarity 55.4%; Pred. No. 8.7e-60;
Conservative 30; Mismatches 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human native manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'note= "mature protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             note= "signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'label= Gln, Glu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "Gln-143"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Asp-159"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW98170 standard; protein; 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'note= "Tyr-74"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Tyr-58"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'note= "His-30"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              note= "His-26"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note=
185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'note=
                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                 Sequence 222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   05-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Active-site
                                                                                                                                                                                                                                                                                             Matches 123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW98170;
                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAW981
      $$$$$$$$$$$$$$$$$$$$$$
                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
```

```
4
                                                                                                                                                                                                                                                                                                                                                                                                                 This protein is human manganese superoxide dismutase (hMnSOD). Novel hMnSOD proteins having catalytic activity which differs from this natural hMnSOD are claimed (see AAW98171-77). The modified proteins exhibit reduced or no product inhibition, or have greater activity, or both, compared to natural hMnSOD. The modifications involve one or amino acid substitutions within the active site of the enzyme, especially at residues His-26, His-30, Tyr-34, His-74, Gln-143, Asp-159, Trp-161 and His-163. The modified hMnSOD, or expression vectors in which modified hMnSOD nucleic acid is linked to a promoter (preferably mammalian), can be used to protect a cell line from damage caused by superoxide radicals (claimed). They can also be used to treat subjects suffering from, or at risk of, cycloxicity caused by superoxide radicals (claimed). As such, they can be used as antioxidants in the treatment of a variety of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       disorders, including inflammation (claimed), reperfusion injury following ischemia (claimed), and cellular damage caused by chemotherapeutic agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKXRAHLQIAACPNQDFLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 SLSSVSRQTFVAPAAFQI---RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S AVCGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human; manganese superoxide dismutase; hMn SOD; superoxide radical; superoxide radical damage; cytotoxicity; inflammation; ischemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Amino acid sequence of a human manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                             New recombinant human manganese superoxide dismutase proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54.0%; Score 623; DB 2; Length 222; 53.6%; Pred. No. 1.5e-58; tive 31; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                   Claim 2; Page 53-54; 61pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB08204 standard; protein; 222 AA
'note= "Trp-161"
                                 /note= "His-163"
                                                                                                                                                   98WO-US018842.
                                                                                                                                                                                         97US-00927230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 53.63
Matches 118; Conservative
                                                                                                                                                                                                                                                                   Nick HS, Silverman DN
                                                                                                                                                                                                                           (UYFL ) UNIV FLORIDA
                                                                                                                                                                                                                                                                                                       WPI; 1999-229242/19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 222 AA;
                                                                                                                                                   10-SEP-1998;
                                                                                                                                                                                       10-SEP-1997;
                                                                       WO9913088-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  04-DEC-2000
                 Active-site
                                                                                                             18-MAR-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAB08204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB08204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
```

```
MnSOD; manganese superoxide dismutase; N-terminal; catalyst; reperfusion; injury; ischaemia; superoxide; SO; molecular oxygen; anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Expression plasmid in Escherichia coli host system - encodes human manganese superoxidedismutase analogue, useful for e.g. treating
                                                                                                                                                                                                                                                                                                                                                                                                           (BIOT-) BIO-TECHNOLOGY GENERAL CORP.
                                                                                                                                                                                                                                                                                                          85US-00801090.
86US-00907051.
86IE-00002851.
87US-00032734.
89US-00453057.
                                                                                                                                                                                                                                                                                 92US-00912213
                                           (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                         Hartman JR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1993-404931/50.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAQ53193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 222 AA;
                                                                                                                                                                                                                                                                                                             22-NOV-1985;
12-SEP-1986;
29-OCT-1986;
27-MAR-1987;
                                                                                                                                                                                        Homo sapiens
                                                                                                                                                                                                                                                                                 10-JUL-1992;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    inflammation
                                                                                                                                                                                                                   US5270195-A.
                                                                                                                                                                                                                                                                                                                                                                             13-DEC-1989
                                           25-MAR-2003
21-JUN-1994
                                                                                                                                                                                                                                                  14-DEC-1993
                                                                                           MnSOD cDNA
                AAR44801;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                         Beck Y,
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein (hAm SÖD). The specification describes a modified hAm SOD which has a catalytic activity which differs from natural hAm SOD in that it exhibits reduced or no product inhibition compared to natural hAm SOD. The natural hAm SOD is especially modified with one or more substitutions in amino acids 26, 30, 34, 74, 143, 159, 161 and 163. The modified hAm SOD is useful for protecting a cell from damage caused by superoxide radicals and for treating a cell from damage caused by superoxide validation and superoxide radicals. The protein is useful for treating inflammation and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Novel human manganese superoxide dismutase protein useful as antioxidant for treating cytotoxicity caused by superoxide radicals, inflammation and reperfusion injury following ischemia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSBEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence represents a human manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKXRAHLQIAACPNQDPLQGTTGLIPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NVTBEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54.0%; Score 623; DB 3; Length 222; 53.6%; Pred. No. 1.5e-58; live 31; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                      /note= "Ala encoded by GGA"
                                                                              l. .24
/note= "signal peptide"
                                                                                                           5. .222
note= "mature protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            reperfusion injury following ischemia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disclosure; Col 27-28; 27pp; English.
                                                             Location/Qualifiers
                                                                                                                                                       'label= Gln, Glu
'note= "encoded by
                                                                                                                                                                                                                                                                                                  98US-00151052
                                                                                                                                                                                                                                                                                                                             97US-00927230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 53.6
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                           Nick HS;
                                                                                                                                                                                                                                                                                                                                                            (UYFL ) UNIV FLORIDA.
                                                                                                                                                                                                                                                                                                                                                                                                                            2000-578537/54.
reperfusion injury
                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAA63891.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Seguence 222 AA;
                                                                                                                                          Misc-difference
                                                                                                                                                                                      Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                           Silverman DN,
                                                                                                                                                                                                                                                                                                  10-SEP-1998;
                                                                                                                                                                                                                                                                                                                               LO-SEP-1997;
                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      present
                                                                                                                                                                                                                                    US6107070-A
                                                                                                                                                                                                                                                                   22-AUG-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ഗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                            Peptide
                                                                                                             Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 6
```

```
NAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSBEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              124 AIEESFGSFBAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63
                                                                                                                                                                                                                                                                                                                                                                                                                                                62
                                            The sequence is of a maganese superoxide dismutase which can be used to catalyse the reduction of superoxide (SO) radicals to hydrogen peroxide and molecular oxygen. It can be used to reduce reperfusion injury following ischaemia and prolong the survival of excised organs. It can also me used as a long acting anti-inflamatory drug. (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                               SLSSVSRQTFVAPAAFQ1---RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                       Length 222,
                                                                                                                                                                                                                                                                                                                                            61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                       53.9%; Score 621; DB 2;
53.6%; Pred. No. 2.5e-58;
iive 31; Mismatches 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAR90713 standard; protein; 222 AA
Claim 1; Fig la-1c; 27pp; English.
                                                                                                                                                                                                                                                                                                                Best Local Similarity 53.69
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 7
AAR90713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ΩX
```

셤 ð g ð g ð

ò

AAR44801 standard; protein; 222 AA.

AAR44801 ID AAR4

g

ò

180 LGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYMA 219 181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA

64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123

ð 셤 ò

S AVGGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALBPHINAQIMQLHHSKHAAAYVNNL

```
The sequence represents a human manganese superoxide-dismutase (MnSOD), phage lambda-g10 in Bscherichia coli, by screening with a 5-probe (AAT15591) and a 3'-probe (AAT15591), followed by subcloning in plasmid pBR322 to give plasmid pMS8-4. The cDNA may be expressed in e.g. E. coli for production of recombinant MnSOD. The MnSOD product may be cleaved with Aeromonas proteolytica aninopeptidase to produce an N-terminally truncated analogue may be used in therapy of conditions associated with generation of oxygen free radicals, particularly synovial inflammetion, arthritis, and lung fibrosis (claimed). (Updated on 25-MAR-2003 to correct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 - having a Lys and for treating e.g.
                                                                                                                                                                                                                                                                                                                                                                            'note= "Residues not present in previously published
                                                                                                Human; manganese superoxide-dismutase; T-lymphocyte; probe; cDNA; scherichia coli; plasmid pMS8-4; N-terminal truncation; cloning; aminopeptidase; antiinflammatcory; oxygen free radical scavenger; synovial inflammation; arthritis; lung fibrosis.
                                                                                                                                                                                                                                                          'note= "Region used to construct probe AAT15591"
                                                                                                                                                                                                                                                                                                                                                                                                       203. .213
/note= "Region used to construct probe AAT15592"
                                                                                                                                                                                                                                                                                        note= "Gln in previously published sequence"
                                                                                                                                                                                                                                                                                                                  /note= "Gln in previously published sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New human manganese super:oxide dismutase analogues opt. His residue absent from the N-terminus, useful synovial inflammation, arthritis or lung fibrosis.
                                                                                                                                                                                                                                                                                                                                              /note= "Gln in previously published
                                                                      Human manganese superoxide-dismutase.
                                                                                                                                                                                                                              "Pre-peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (BIOT-) BIO-TECHNOLOGY GENERAL CORP.
                                                                                                                                                                                                   iocation/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; Fig 1; 45pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Beck Y, Nimrod A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95EP-00106995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    87US-00032734
88US-00161117
                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                            147. .148
                                                                                                                                                                                                                                                                                                                                                                                          seguence"
                                                                                                                                                                                                                                             .48
                                                                                                                                                                                                                              'note=
                              (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 1996-059735/07.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAT15589
                                                                                                                                                                                                                                                                                                    Misc-difference
                                                                                                                                                                                                                                                                                                                                 Misc-difference
                                                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-MAR-1987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5-MAR-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26-FEB-1988;
                                                                                                                                                                        Homo sapiens
                           25-MAR-2003
                                          06-APR-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hartman JR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               field.)
AAR90713;
                                                                                                                                                                                                               Peptide
                                                                                                                                                                                                                                                                                                                                                                                                       Region
```

```
Human manganese superoxide dismutase (MnSOD) (AAW00018) catalyses the reduction of superoxide radicals to H2O2 and O2. Recombinant MnSOD can be obtd. using transformed host cells, sep. Bscherichia coli cells contg. a plasmid carrying e.g. a cDNA clone (AAT34277) obtd. from a human T-cell library. The MnSOD is useful for reducing reperfusion injury, treating linflammeation or bronchial pulmonary dysplasia and for prolonging survival of excised organs. (Updated on 25-MAR-2003 to correct PF field.) (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Use of recombinant human manganese super:oxide dismutase - for treating inflammation or bronchial pulmonary dysplasia, reducing reperfusion
                                                                                                                                               Manganese superoxide dismutase; MnSOD; reperfusion injury; ischaemia; bronchial pulmonary dysplasia; inflammation; antiinflammatory.
                                                                                                                    manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           injury or prolonging organ survival.
                                                                                                                                                                                                                              1. .24
/label=_Sig_peptide
                                                                                                                                                                                                                                                    25. .222
/label= Mat_protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (BIOT-) BIO-TECHNOLOGY GENERAL CORP
                                                                                                                                                                                                                Location/Qualifiers
                           Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 1; Fig 1A-1C; 27pp; English.
                                                                                                                                                                                                                                                                                                                                                                                       86US-00907051.
86IE-00002851.
87US-00032734.
89US-00453057.
92US-00912213.
                                                                                                                                                                                                                                                                                                                                                    95US-00370461
                                                                                                                                                                                                                                                                                                                                                                            85US-00801090
                           AAW00018 standard; protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                            92US-00912213
93US-00120951
                                                                             (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 1996-361912/36.
N-PSDB; AAT34277.
                                                                                                                                                                                                                                                                                                                                                                                       12-SEP-1986;
29-OCT-1986;
27-MAR-1987;
13-DEC-1989;
10-JUL-1992;
14-SEP-1993;
                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                                   09-JAN-1995;
                                                                            25-MAR-2003
24-OCT-1996
                                                                                                                                                                                                                                                                                                                       30-JUL-1996.
                                                                                                                                                                                                                                                                                                                                                                            22-NOV-1985;
                                                                                                                                                                                                                                                                                                JS5540911-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hartman JR,
                                                    AAW00018;
                                                                                                                                                                                                                             Peptide
                                                                                                                                                                                                                                                       Protein
RESULT 8
AAW00018
```

4;

10;

53.9%; Score 621; DB 2; Length 222; 53.6%; Pred. No. 2.5e-58; Live 31; Mismatches 61; Indels

Matches 118; Conservative

Query Match Best Local Similarity

Sequence 222 AA;

```
This protein is human manganese superoxide dismutase (hMnSOD). Novel
hMnSOD proteins having catalytic activity which differs from this natural
hMnSOD are claimed (see AAWBATI-77). The modified proteins exhibit
reduced or no product inhibition, or have greater activity, or both,
compared to natural hMnSOD. The modifications involve one or amino acid
substitutions within the active site of the erazyme, especially at
residues His-26, His-30, Tyr-34, His-74, Gln-143, Asp-159, Trp-161 and
His-163. The modified hMnSOD, or expression vectors in which modified
hMnSOD nucleic acid is linked to a promoter (preferably mammalian), can
be used to protect a cell line from damage caused by superoxide radicals
(claimed). They can also be used to treat subjects suffering from, or at
isk of, cyctoxicity caused by superoxide radicals (claimed). As such,
they can be used as antioxidants in the treatment of a variety of
disorders, including inflammation (claimed), reperfusion injury following
ischemia (claimed), and cellular damage caused by chemotherapeutic agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64 NAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63 NVTEEKYQEALAKGDVTAQIALQPALKENGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANODPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKQRGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                               S AVCGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL
                                                                                                                                                                                                                                                                                                                                                                                                                             6 SLSSVSROTFVAPAAFOI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Superoxide dismutase, MnSOD, SOD, human, protein engineering, enzyme engineering, antioxidant, antiinflammatory, cytotoxicity, inflammation, reperfusion injury, therapy, mutant.
                                                    New recombinant human manganese superoxide dismutase proteins.
                                                                                                                                                                                                                                                                                                                                                                      ; Score 621; DB 2; Length 222;
; Pred. No. 2.5e-58;
31; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human manganese superoxide dismutase Q143E mutant.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25. .222
/note= "mature protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'note= "signal peptide"
                                                                                  Disclosure, Page 52-53; 61pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW98175 standard; protein; 222 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'note= "His-26"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note= "His-30"
                                                                                                                                                                                                                                                                                                                                                                       53.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  05-JUL-1999 (first entry)
                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 53.6%
Matches 118; Conservative
           WPI; 1999-229242/19.
                          N-PSDB; AAX24998
                                                                                                                                                                                                                                                                                                                                            Sequence 222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 10
AAW98175
à
                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                      4
                                                                                                                                                                         AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                  64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                            62
                                                                                                                 S AVCGTSRQ--LAPALGYLGSRQKHSLPDDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL
                                                                                               6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Superoxide dismutase; MnSOD; SOD; human; protein engineering; enzyme engineering; antioxidant; antiinflammatory; cytotoxicity; inflammation; reperfusion injury; therapy.
                                                                    10;
                                        Length 222;
                                                                    61; Indels
                                                                                                                                                                                                                                                                       IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                      53.9%; Score 621; DB 2;
53.6%; Pred. No. 2.5e-58;
ive 31; Mismatches 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human native manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   note= "mature protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                          AAW98169 standard; protein; 222 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Gln-143"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Asp-159"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Trp-161"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'note= "His-163"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          note= "Tyr-58"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     note= "Tyr-74"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note= "His-26"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            note= "His-30"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98WO-US018842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    97US-00927230
                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         note= '
.87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Silverman DN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ...24
'note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (UYFL ) UNIV FLORIDA.
                                                     Local Similarity
es 118; Conserv
              Sequence 222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO9913088-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                  05-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           18-MAR-1999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nick HS,
                                                                                                                                                                                                                 124
                                                                                                                                                                                                                                                                       181
                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                       AAW981.69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein
                                                                      Matches
                                                                                                                                                                                                                                                                                                                                              RESULT 9
                                                                                                                                                                                                                                                                                                                                                           AAW98169
X S
                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                  g
                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                       ਨੋ
                                                                                                                                                        ò
```

Gaps

10;

-

```
This sequence comprises both prepro- and mature-manganese super- oxide dismutase (MSOD). It is encoded by the sense strand of a double-stranded molecule contained in a recombinant vehicle. This recombinant MSOD catalyses the reaction of hydrogen ions and the SOD radical anion to form hydrogen peroxide and water. It is useful in veterinary and pharmaceutical compens. for eq reducing lesions of reperfusion following ischaemia, to prolong survival lime isolated organs and for treating inflammation. See also AANN1371-72. (Updated on 10-MAR-2003 to add missing OS field.) (Updated on 25-MAR-2003 to correct PR field.)
63 NVTEEKYQEAFAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEBATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New DNA coding for polypeptide of human manganese superoxidedismutase useful e.g. for treating inflammation, and new expression vectors and transformed cells.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6 SLSSVSRQTFVAPAAFQI --RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5 AVCGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Human MSOD; hydrogen peroxide; ischaemia; lesions; inflammation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 53.7%; Score 619; DB 1; Length 222; 53.6%; Pred. No. 4.1e-58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62; Indels
                                                                                                                 181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLOA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Recombinant human manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      30; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25. .222
/label= mature MSOD
                                                                                                                                                                                                                                                                     AAP71701 standard; protein; 222 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Fig 1; 46pp; French.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          85US-00801051.
85US-00801090.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      86BE-00905796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            86US-00907051
                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                              (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (BIOT-) BIO-TECHNOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1987-101441/15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; AAN71370.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       free radicals
                                                                                                                                                                                                                                                                                                                                                                           25-MAR-2003
10-MAR-2003
14-MAY-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20-NOV-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          22-NOV-1985;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22-NOV-1985;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12-SEP-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16-MAR-1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BE905796-A.
                                                                                                                                                                                                                                                                                                                          AAP71701;
                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Protein
                                                                                                                                                                                                                    RESULT 11
                                                                                                                                                                                                                                             AAP71703
                                                                               à
                                                                                                                            Db
                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This protein is a Q143E mutant of human manganese superoxide dismutase (hmmSDD, see also AAW98170). Novel modified hmmSDD proteins having catalytic activity which differs from natural hmmSDD are claimed. The modified proteins (see also AAW98177) exhibit reduced or no product inhibition, or have greater activity, or both, compared to natural hmmSDD. The modifications involve one or amino acid substitutions within the active site of the enzyme, especially at residues His-26, His-30, Tyr His-74, Gln-143, Asp-159, Trp-161 and His-163. Gln-143, Tyr-34 and His-30 are located near the active site metal, are highly conserved, and are involved in a hydrogen bond relay which links the active site metal-bound hydroxyl group to ordered solvent, and are thus all potentially involved in adalytic activity, product inhibition and/or enzyme stability. Modified hwmSODs, or expression vectors in which a modified hwmSOD sucleic acid is linked to a promoter (preferably mammalian), are used to protect a cell line from damage caused by superoxide radicals (claimed). They can also be used to treat subjects suffering from, or at risk of, cytotoxicity caused by subseroxide radicals (claimed). As such, discrets they can be used as antioxidants in the treatment of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety of a variety
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            disorders, including inflammation (claimed), reperfusion injury following ischemia (claimed), and cellular damage caused by chemotherapeutic agents. Note. The present sequence is not shown in the specification but is derived from the hMnSoD sequence given on page 53-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64 NAAEESYSAAVGKEDVLIQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S AVCGTSRQ--LAPALGYLGSRQKHSLPDLFYDYGALEPHINAQIMQLHHSKHHAAAYVNNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                6 SLSSVSROTFVAPAAFOI -- RAKHTLPELPYAYDALEPSISKEIMTLHHTXHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New recombinant human manganese superoxide dismutase proteins
                                                                                                                                                                             'note= "Gln replaces Glu in wild-type hMnSOD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    53.0%; Score 620; DB 2; Length 222; 53.2%; Pred. No. 3.2e-58; ive 32; Mismatches 61; Indels :
                                                                                                                              /label= Gln, Glu
                                                                                                                                                                                                                                       /note= "Gln-143"
                                                                                                                                                                                                                                                                                           "Asp-159"
                                                                                                                                                                                                                                                                                                                                                "Trp-161"
                                                                                                                                                                                                                                                                                                                                                                                                 /note= "His-163"
                           /note= "Tyr-58"
                                                                          /note= "Tyr-74"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 14; Page; 61pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98WO-US018842.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97US-00927230.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            117; Conservative
                                                                                                                                                                                                                                                                                           /note= '
185
                                                                                                                                                                                                                                                                                                                                                /note= '
187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Silverman DN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (UYFL ) UNIV FLORIDA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1999-229242/19.
                                                                                                                                                                                                                                                                   183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity
                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Seguence 222 AA;
                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO9913088-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10-SEP-1997;
Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LB-MAR-1999
                                                                                                                                                                                                              Active-site
                                                                                                                                                                                                                                                                                                                    Active-site
                                                                                                                                                                                                                                                                                                                                                                         Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nick HS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Loca
Matches
```

62

음 ð

à

원 경 원

```
decomposition of the superoxide anion to peroxide. Agents such as superoxide dismutase are able to increase the salvage of heart muscle cells. The SOD gene (AAT31018) can be used in novel therapeutic constructs also contg. a tissue-specific promoter and a hypoxia response enhancer element. Expression of the gene is enhanced in the target tissue under hypoxic conditions, such as those encountered during ischaema and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNODPLQGTTGLIPL 179
Chimeric gene contg. therapeutic gene linked to HREE - partic. for expressing SOD etc. in hypoxic tissue to reduce tissue injury caused by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  63 NVNEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                  Gene therapy; hypoxia related enhancer element; HREE; ischaemia; reperfusion; promoter; superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          manganese superoxide dismutase (AAW00453) catalyses the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Green
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    53.6%; Score 618; DB 2; Length 222; 53.6%; Pred. No. 5.3e-58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IGVDIWEHAFYLOYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                  Laderoute KR,
                                                            IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEABARLQA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            31; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Disclosure; Page 94-95; 118pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              m
                                                                                                                                                                                                                                                                                                                Human manganese superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Murphy
                                                                                                                                                                                                Ą
                                                                                                                                                                                                AAW00453 standard; protein; 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            95WO-IB000996,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94US-00365486.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Webster KA, Bishopric NH,
                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 53.6<sup>5</sup>
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ischaemia or reperfusion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1996-321849/32.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N-PSDB; AAT31018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (STRI ) SRI INT.
                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-NOV-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23-DEC-1994;
                                                                                                                                                                                                                                                                            26-SEP-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        04-JUL-1996.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            reperfusion
                                                                                                                                                                                                                                      AAW00453;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                        121
                                                              181
                                                                                                  181
                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                        음
                                                            ₹
                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                  Human manganese superoxide dismutase or its analogues or mutants is used generation of oxygen free radicals, eg reperfusion injury following ischaemia or organ transplant, inflammation caused by Crohn's disease or colitis, synovial inflammation induced by bacterial lipopolyyaccharide endotoxin, arthritis, bronchial pulmonary displassia or lung fibrosis by radiation or an anti-neoplastic agent, eg bleomycin. It can also be used to prolong the life of excised organs. As it remains in the serum for long periods, it may be used as a long-acting therapeutic agent. Dosage is 1-200 mg/joint or 1-100, esp. 3-50, mg/kg body wt. daily. It is given intra-articularly, intratracheally, sc or iv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Recombinant human manganese superoxidedismutase - used for treating e.g. reperfusion injury, inflammation, arthritis, bronchial pulmonary dysplasia or lung fibrosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                            AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 223;
                                                                                                                                                                                                                                                                                                                                                                                              Human manganese superoxide dismutase; oxygen free radicals.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                            IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    53.7%; Score 619; DB 1; L
53.6%; Pred. No. 4.2e-58;
ive 30; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                      Human manganese superoxide dismutase.
                                                                                                                                                                                                                                          Ŕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure; Page ?; 46pp; English.
                                                                                                                                                                                                                                          AAP80551 standard, protein; 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nimrod A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      87US-00032734.
88US-00161117.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88EP-00104880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (BIOT -) BIO-TECHNOLOGY GEN
                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Beck Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 1988-272584/39.
N-PSDB; AAN81158.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
Matches 118; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 223 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  25-MAR-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-MAR-1987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-FEB-1988;
                                                                                                                                                                                                                                                                                                                    22-OCT-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hartman JR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28-SEP-1988
                                                                120
                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                              1.24
```

d

ð

d

δ

ð

```
(claimed). They can also be used to treat subjects suffering from, or at risk of, cytotoxicity caused by superoxide radicals (claimed). As such, they can be used as antioxidants in the treatment of a variety of disorders, including inflammation (claimed), reperfusion injury following ischemia (claimed), and cellular damage caused by chemotherapeutic agents
 are involved in a hydrogen bond relay which links the active site metalbound hydroxyl group to ordered solvent, and are thus all potentially involved in catalytic activity, product inhibition and/or enzyme stability. The particularly preferred GHIJN mutant has a kcat of 0.3 m/sec and a kcat/km of 0.82/uM.sec compared to respective values of 40 m/sec and 800/uM.sec for wild-type hMmSOD. It exhibits no product inhibition. Modified hMmSODs, or expression vectors in which a modified hMmSOD nucleic acid is linked to a promoter (preferably mammalian), are used to protect a cell line from damage caused by superoxide radicals (claimed). They can also be used to treat subjects suffering from, or at
                                                                                                                                                                                                                                              Sequence 222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW9817
      $$$$$$$$$$$$$$$$$$$$$
                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This protein is a Q143N mutant of human manganese superoxide dismutase (hMmSDD, see also AAM98170). Novel modified hMmSDD proteins having catalytic activity which differs from natural hMmSDD proteins described. The modified proteins (see also AAM98172-77) exhibit reduced or no product inhibition, or have greater activity, or both, compared to natural hMmSDD. The modifications involve one or amino acid substitutions within the active site of the enzyme, especially at residues His-26, His-30, Tyr-34 and His-30 are located near the active site metal, are highly conserved, and
                                                                                                                                                                                                        Superoxide dismutase, MnSOD, SOD; human; protein engineering; enzyme engineering; antioxidant; antiinflammatory; cytotoxicity; inflammation; reperfusion injury; therapy; mutant.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New recombinant human manganese superoxide dismutase proteins.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'note= "Gln replaces Asn in wild-type hMnSOD"
180 LGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYMA 219
                                                                                                                                                                             Human manganese superoxide dismutase Q143N mutant.
                                                                                                                                                                                                                                                                                                                                                                                     'note= "mature protein"
                                                                                                                                                                                                                                                                                                                                                      "signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 15; Page 54-55; 61pp; English.
                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                AAW98171 standard; protein; 222 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /label= Gln, Glu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "Trp-161"
187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note= "Gln-143"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note= "Asp-159"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "His-163"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'note= "Tyr-74"
                                                                                                                                                                                                                                                                                                                                                                                                                     'note= "His-26"
                                                                                                                                                                                                                                                                                                                                                                                                                                                     'note= "His-30"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'note= "Tyr-58"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98WO-US018842
                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                     .222
                                                                                                                                                                                                                                                                                                                                                         note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Silverman DN;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (UYFL ) UNIV FLORIDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1999-229242/19.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10-SEP-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO9913088-A1
                                                                                                                                            05-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                      Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                    Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             18-MAR-1999
                                                                                                                                                                                                                                                                                          Synthetic.
                                                                                                              AAW98171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nick HS,
                                                                                                                                                                                                                                                                                                                                       Peptide
                                                                                                                                                                                                                                                                                                                                                                      Protein
                                              RESULT 14
                                                               AAW9817
 g
```

```
64 NAAEESYSAAVGKEDVLIQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                     63 NVTERKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     124 AIEESPGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKKRAHLQIAACPNNDPLQGTTGLIPL 179
                                                                                                                                                                                                                 S AVCGISRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL
                                                                                                                                                               6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Superoxide dismutase, MnSOD; SOD; human; protein engineering; enzyme engineering; antioxidant; antiinflammatory; cytotoxicity; inflammation; reperfusion injury; therapy; mutant.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "Gln replaces Asp in wild-type hMnSOD"
167
        Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Human manganese superoxide dismutase Q143D mutant.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181 IGVDIWEHAFYLOYKNVKPDYLAAVWSVINYKEAEARLOA
53.6%; Score 618; DB 2;
53.2%; Pred. No. 5.3e-58;
iive 31; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'note= "signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'note= "mature protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'label= Gln, Glu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW98174 standard; protein; 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'note= "His-26"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'note= "His-30"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "Tyr-58"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'note= "Tyr-74"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                           Matches 117; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  note=
                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    05-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Active-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAW98174;
    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCOS SECTION OF THE FILTER FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FRANKE FR
```

```
New recombinant human manganese superoxide dismutase proteins.
/note= "Gln-143"
183
         note= "Asp-159"
                            'note= "His-163"
                                                                                                             Claim 14; Page; 61pp; English.
                                                       98WO-US018842,
                                                               97US-00927230.
                  note=
                                                                                  Silverman DN;
                                                                         (UYFL ) UNIV FLORIDA.
                                                                                          WPI; 1999-229242/19.
                                                                LO-SEP-1997;
                                     WO9913088-A1
                                              18-MAR-1999
              Active-site
                        Active-site
     Active-site
                                                                                  Nick HS,
```

This protein is a Q143D mutant of human manganese superoxide dismutase (hmmSDD, see also AAW98170). Novel modified hmmSDD proteins having catalytic activity which differs from natural hmmSDD are claimed. The modified proteins (see also AAW9817-77) exhibit reduced or no product inhibition, or have greater activity, or both, compared to natural hmmSDD. The modifications involve one or amino acid substitutions within the active site of the enzyme, especially at residues His-26, His-30, Tyr-16, His-30 are located near the active site metal, are highly conserved, and are involved in a hydrogen bond relay which links the active site metal-common hydroxyl group to ordered solvent, and are thus all potentially cound hydroxyl group to ordered solvent, and are thus all potentially containty. Modified hmmSODs, or expression vectors in which a modified hmmSODs, or expression vectors in which a modified hmmSOD contained to a promoter (preferably mammalian), are used to protect a cell line from damage caused by superoxide radicals (claimed). They can also be used to treat subjects suffering from, or at tisk of, cytotoxicity caused by superoxide radicals (claimed). They can also be used to treat subjects suffering from, or at tisk of, cytotoxicity caused by superoxide radicals (claimed). They can also be used to treat subjects suffering from, or at tisk of, cytotoxicity caused by superoxide radicals. disorders, including inflammation (claimed), reperfusion injury following ischemia (claimed), and cellular damage caused by chemotherapeutic agents. Note. The present sequence is not shown in the specification but is derived from the hMnSOD sequence given on page 53-54

Sequence 222 AA;

64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123 124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180 120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKXRAHLQIAACPNDDPLQGTTGLIPL 179 S AVCGISRQ--LAPALGYLGSRQKHSLPDLPYDYGALBPHINAQIMQLHHSKHHAAYVNNL 62 6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL 10; Gaps 53.6%; Score 618; DB 2; Length 222; 53.2%; Pred. No. 5.3e-58; Live 31; Mismatches 62; Indels 181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220 Query Match Best Local Similarity 53.2 Matches 117; Conservative g g ð 임 8 ò

Search completed: March 30, 2004, 17:13:08

time : 63 secs Job

```
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
```

OM protein - protein search, using sw model

March 30, 2004, 17:09:18; Search time 22 Seconds Run on:

(without alignments) 520.953 Million cell updates/sec

US-09-727-855B-5

1153 1 MSVRASLSSSVSRQTFVAPAA......AAVWSVINYKEABARLQAAL 222 Title: Perfect score: Sequence:

Scoring table:

BLOSUM62 Gapop 10.0 , Gapext 0.5

Total number of hits satisfying chosen parameters: 389414 seqs, 51625971 residues Searched:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

/cgm2_6/ptodata/2/iaa/5A_COMB.pep:*
/cgm2_6/ptodata/2/iaa/5B_COMB.pep:*
/cgm2_6/ptodata/2/iaa/6A_COMB.pep:*
/cgm2_6/ptodata/2/iaa/6B_COMB.pep:*
/cgm2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
/cgm2_6/ptodata/2/iaa/PCTUS_COMB.pep:* Issued Patents AA: Database :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

STIMMARTES

SUMMARIES	1 DB ID Description	4 US-09-091-097-8 Sequence 8, Appli	4 US-09-091-097-6 Sequence 6,	2 US-08-927-230A-2 Seguence 2,	3 US-09-151-052-2 Sequence 2.	2 US-08-365-486A-28 Sequence	2 US-08-927-230A-3 Sequence 3,	3 US-09-151-052-3 Sequence 3.	3 US-08-880-342-28 Sequence 28,	2 US-08-023-980B-44 Sequence 44,	2 US-08-486-953A-52 Seguence 52,	3 US-09-126-109-2 Seguence 2. 7	6 5240847-10 Patent No.	3 US-09-075-019-2 Sequence	3 US-09-075-019-7	6 5240847-11 Patent No.	2 US-08-928-692-30	4 US-09-339-972-30 Sequence 30,	6 5240847-2 Patent No. 524	4 US-09-198-452A-75 Sequence	4 US-09-489-039A-12227	1 US-08-445-909A-29 Sequence	1 US-08-445-909A-17 Sequence 17,	4 US-08-679-493A-185 Sequence 185	4 US-09-373-731-2 Sequence 2, 7	4 US-09-543-681A-6654 Sequence	4 TIS-09-134-001C-3584 Section 2504
SUMMARIES	DB	4 US-09-091-09		_	_		_	_						3 US-09-075-01	3 US-09-075-019	9	~	4	9	4	4		1 US-08-445-909	4 US-08-679-493	4 US-09-373-733	4 US-09-543-681	4 IIS-09-134-001
æ	Query Match Length	 		54.0 222		53.6 222	9.	9.	9.				52.9 198				49.4 230		Z,			0.		41.8 196		41.5 224	40.4 201
	Result No. Score	1 692	2 668.5	3 623	4 623	5 618	6 618	7 618		9 617		11 617	12 610	13 607	14 607	15 606				19 513.5	20 498.5			23 482.5	24 479		26 465.5

Sequence 31, Appl	Sequence 24593, A	Sequence 3442, Ap	Sequence 24, Appl	Sequence 6, Appli	Sequence 4346, Ap	Sequence 4456, Ap	Sequence 9633, Ap	Sequence 24333, A	Sequence 1, Appli	Sequence 1, Appli	Sequence 184, App	Sequence 2, Appli	Sequence 52, Appl	Sequence 8, Appli	Sequence 8, Appli	7	Sequence 14, Appl
US-09-339-972-31	US-09-252-991A-24593	US-09-540-236-3442	US-09-214-909-24	US-09-262-856A-6	US-09-328-352-4346	US-09-543-681A-4456	US-09-489-039A-9633	US-09-252-991A-24333	US-09-411-578-1	US-09-749-233-1	US-08-679-493A-184	US-09-008-303-2	US-09-091-097-52	US-09-458-457-8	US-09-947-199A-8	US-09-475-252-2	US-09-039-198A-14
4	4	4	4	4	4	4	4	4	e	4	4	m	4	4	4	4	m
233	207	241	207	188	219	205	227	245	214	214	190	213	30	835	835	2016	373
40.1	40.0	39.4	38.6	37.3	31.8	31.1	30.3	29.3	28.3	28.3	27.1	17.5	9.0	9.0	9.0	8.1	7.8
462	461	454.5	444.5	430.5	367	358.5	349.5	337.5	326	326	312	201.5	104	103.5	103.5	93.5	89.5
28	5.7	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45

ALIGNMENTS

```
APPLICANT: YAGIHARA, TOMOKO
APPLICANT: KURODA, MASANOBU
APPLICANT: KURODA, MASANOBU
APPLICANT: KATO, IKUNOSHIM
APPLICANT: KATO, IKUNOSHIM
APPLICANT: YASUEDA, HIROSHI
APPLICANT: YASUEDA, HIROSHI
APPLICANT: YAMAGUCHI, HIDEYO
ITILE OF INVENTION: ANTIGENIC PROTEIN ORGINATING IN
ITILE OF INVENTION: MALASSEZIA
NUMBER OF SEQUENCES: 58
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                     STATE: VA
COUNTRY: USA
ZIP: 22040-0747
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/091,097
                                                                                                                                                                                                                                                                                                                                                                LLP
                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE: BIRCH, STEWART, KOLASCH & BIRCH, STREET: PO BOX 747
CITY: FALLS CHURCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICALL.

FILING DATE:
CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: WEINER, MARC S.
REGISTRATION NUMBER: 32,181
REFERENCE/DOCKET NUMBER: 1422-0346P
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-205-8000
"THEFAX: 703-205-8050
                 Sequence 8, Application US/09091097
Patent No. 6432407
GENERAL INFORMATION:
                                                                            TAKESAKO, KAZUTOH
OKADO, TAKASHI
YACITHARA, TOMOKO
KURODA, MASANOBU
ONISHI, YOSHIMI
KATO, IKUNOSHIN
AKIYAMA, KAZUO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH: 224 amino acids TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-091-097-8
                                                                                                                                                                                                                                                                                                                                                                                                                va
USA
US-09-091-097-8
```

Score 692; DB 4; Length 224; Pred. No. 4.8e-73; 60.0%; 59.3%; Query Match Best Local Similarity

```
143 TAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                               64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                         83 VKLOSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNAD 142
3 VMTEYTLPPLPYAYDALEPFISKEIMTVHHDKHHQTYVNNLNAAEKAYAEATAANDVLKQ 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                               Sequence 2, Application US/08927230A
; Patent No. 5985633
; GENERAL INFORMATION: A PERIOD OF TILE OF INVENTION: Human Manganese Superoxide Dismutase Mutants
; NUMBER OF SEQUENCES: 11
; CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD, LLP
; STREET: 28 State Street, Floor 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Score 623; DB 2; Length 222;
; Pred. No. 6.2e-65;
31; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/927,230A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Xaa can code for Gln or Glu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             38,872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION:
TELEPHONE: (617)227-7400
TELEFAX: (617)742-4214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            54.0%;
                                                                                                                                                                                                              203 AAVWSVINYKEAEAR 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: REMILIARA, Jane
REGISTRATION NUMBER: 38, E
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        : 222 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity 53.6%
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE:
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCATION: 131
; COTHER INFORMATION:
US-08-927-230A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY: USA
ZIP: 02109-1875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: OTHER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                 US-08-927-230A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STATE:
                                                                                                                                                                                                                                                                                   RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                           a
                                                                                                                                                g
                                      ò
                                                                                                                 à
                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ä
                                                                                                               67 EESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIE 126
                                                                                                                                            127 ESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIW 186
                                                                                                                                                                                                                82
                                        11 SRQTFVAP----AAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAA 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23 IRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQ
                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ij,
         4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 4; Length 206;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
     53; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: KURODA, MASANOBU
APPLICANT: ONISHI, YOSHIMI
APPLICANT: KATO, IKUNOSHIN
APPLICANT: AKIYAMA, KADO
APPLICANT: AKIYAMA, KADO
APPLICANT: YARUEDA, HIROSHI
APPLICANT: YAMAGUCHI, HIDEYO
TITILE OF INVENTION: MALASSEZIA
NUMBER OF SEQUENCES: 58
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEE: BIRCH, STEWART, KOLASCH & BIRCH, LLP
: PO BOX 747
FALLS CHURCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: Patentin Release #1.0, Version #1.30 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/09/091,097 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58.0%; Score 668.5; DB 4; 63.1%; Pred. No. 2.5e-70; iive 24; Mismatches 47;
                                                                                                                                                                                                                                                                  187 EHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                       31; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STATE: VA
COUNTRY: USA
ZUNTRY: USA
ZIP. Z2040-0747
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                            ; Sequence 6, Application US/09091097; Patent No. 6432407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTORNEY/AGENT INFORMATION:
NAME: WEINER, MARC S.
REGISTRATION NUMBER: 32,181
REFERENCE/DOCKET NUMBER: 142
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-205-8000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  32,181
                                                                                                                                                                                                                                                                                                                                                                                                                                                    TAKESAKO, KAZUTOH
OKADO, TAKASHI
YAGIHARA, TOMOKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 206 amino acids
TYPE: amino acid
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity 63.1;
Matches 123; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
         Matches 128; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      703-205-8050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-091-097-6
                                                                                                                                                                                                                                                                                                                                                             RESULT 2
US-09-091-097-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                    g
                                                                                                                                                                                                                             gg
                                                                                                                                                                                                                                                                  ð
                                                                             g
                                                                                                                     ð
                                                                                                                                                                                         ò
```

```
63 NVNBEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64 NAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSBEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S AVGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 SLSSVSRQTFVAPAAFQI - - RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human Manganese Superoxide Dismutase Mutants
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           53.6%; Score 618; DB 2; Length 222; 53.6%; Pred. No. 2.4e-64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                   GENERAL INFORMATION:
APPLICANT: Webster, Keith A.
APPLICANT: Bishopric, Nanette H.
TITLE OF INVENTION: Tissue Specific Hypoxia Regulated
TITLE OF INVENTION: Therapeutic Constructs
NUMBER OF SEQUENCES: 31
CORRESPONDENCE ADDRESS:
ADDRESSEE: Dehlinger & Associates
STREET: 350 Cambridge Avenue, Suite 250
         180 LGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYMA 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDIUM TYPE: Ploppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/365,486A
FILING DATE: 23-DEC-1994
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      31; Mismatches
                                                                                                                                                                                                                                                                                                           SEE: Dehlinger & Associates
: 350 Cambridge Avenue, Suite 250
Palo Alto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8255-0018
                                                                                                            Sequence 28, Application US/08365486A Patent No. 5834306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 3, Application US/08927230A
Patent No. 5985633
GENERAL INFORMATION:
APPLICANT: Nick et al.
TITLE OF INVENTION: Human Mangame
NUMBER OF SEQUENCES: 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         38,615
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: 82
TELECOMMUNICATION INFORMATION
TELEPHONE: (415) 324-0880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELEFAX: (415) 324-0960
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME: Sholtz, Charles K. REGISTRATION NUMBER: 38,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              222 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                      USA
                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY: US
ZIP: 94306
                                                                 RESULT 5
US-08-365-486A-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-08-365-486A-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-08-927-230A-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 6
         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                      120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKXRAHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLIKKLEVITTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               63 NVTERKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5 AVCGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6 SLSSVSRQTFVAPAAFQI -- RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            54.0%; Score 623; DB 3; Length 222;
53.6%; Pred. No. 6.2e-65;
Live 31; Mismatches 61; Indels 10; Gaps
                                                                                                                                                                                                                                   Sequence 2, Application US/09151052
Patent No. 6107070
GENERAL INFORMATION:
APPLICANT: Nick et al.
TITLE OF INVENTION: Human Manganese Superoxide Dismutase Mutants
NUMBER OF SEQUENCES: 11
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKPIELD
STREET: 28 State Street, Floor 24
                                                                                                            181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/151,052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LOCATION: 131
OTHER INFORMATION: Xaa can code for Gln or Glu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ::
::
::
::
::
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME: Remillard, Jane
REGISTRATION NUMBER: 38,872
REGISTRATION NUMBER: UBJ-001
TELECOMMUNICATION INFORMATION:
TELEPHONE: (617)227-7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/927,230
FILING DATE: September 10, 1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         : 222 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (617)742-4214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 53.6%
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                             ADDAR STREET: 20 TTMV: Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY:
                                                                                                                                                                                                            US-09-151-052-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-151-052-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                            g
                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
```

Gaps

10;

```
amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY: UR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-08-880-342-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGIH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-151-052-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S AVCGTSRQ--LAPALGYLGSRQKHSLPDLFYDYGALEPHINAQIMQLHHSKHHAAYVNNL 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             62; Indels 10; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
APPLICANT: Nick et al.
TITLE OF INVENTION: Human Manganese Superoxide Dismutase Mutants
NUMBER OF SEQUENCES: 11
CORRESPONDRICE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD
STREET: 28 State Street, Floor 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180 LGIDVWEHAYYLQYKAVRPDYLKAIWNVINWENVTERYMA 219
                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/927,230A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; OTHER INFORMATION: Xaa can code for Gln or Glu
US-08-927-230A-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 53.6%; Score 618; DB 2; Best Local Similarity 53.2%; Pred. No. 2.4e-64; Matches 117; Conservative 31; Mismatches 62.
CORRESPONDENCE ADDRESS:
ADDRESSEE: LAHIVE & COCKFIELD, LLP STREET: 28 State Street, Floor 24
                                                                                                                                                                                                                                 ZIP: 02109-1875
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 3, Application US/09151052
Patent No. 6107070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: Remillard, Jane
REGISTRATION NUMBER: 38,872
REFRENCE/DOCKET NUMBER: UFJ-COCKET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOLECULE TYPE: protein
                                                                                                                                                       Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OTHER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STREET: 28 Ste
CITY: Boston
STATE: Massach
COUNTRY: USA
                                                                                                                        Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 7
US-09-151-052-3
                                                                                                                                                                                                  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
```

```
64 NAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 124 AIBESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKXRAHLQIAACPNNDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      53.6%; Score 618; DB 3; Length 222;
53.2%; Pred. No. 2.4e-64;
tive 31; Mismatches 62; Indels 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Webster, Keith A.
APPLICANT: Bishopric, Nanette H.
APPLICANT: Bishopric, Nanette H.
APPLICANT: Murphy, Brian
APPLICANT: Green, Christopher J.
APPLICANT: Green, Christopher J.
TITLE OF INVENTION: Tissue Specific Hypoxia Regulated
TITLE OF INVENTION: Therapeutic Constructs
NUMBER OF SEQUENCES: 37
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                     SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/151,052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCATION: 131
OTHER INFORMATION: Xaa can code for Gln or Glu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE: Dehlinger & Associates
STREET: 350 Cambridge Avenue, Suite 250
CITY: Palo Alto
                                                                                                                                                                APPLICALING PATE:
FILING DATE:
FILING DATE:
CLASSIFICATION DATA:
APPLICATION NUMBER: 08/927,230
FILING DATE: September 10, 1997
ATTORNEY/AGENT INFORMATION:
NAME: Remillard, Jane
REGISTRATION NUMBER: 38,872
REFERENCE/DOCKET NUMBER: UFJ-001
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
                                                                                    PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 28, Application US/08880342
Patent No. 6218179
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            222 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity 53.2%
Matches 117; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX: (617)742-4214
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOLECULE TYPE: protein
                                                                                    OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY: OTHER
```

```
PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     44:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            176 Federal Street
                                                                                                                                                                                                                                                                                                                                                                             TELEPHONE: 617/723-4123
TELEFAX: 617/723-8962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       : 222 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY: linear
MOLECULE TYPE: protein
                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-023-980B-44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 10
US-08-486-953A-52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGIH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63 NVNEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S AVGTSRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            METHODS FOR THE DIAGNOSIS,
PREVENTION OF DISEASES OF CELL DEATH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKBIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDIUM TYPE: FLOPMY disk COMPUTER: FLOPMY disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA: APPLICATION DATA: APPLICATION NUMBER: US/08/080,342 FILING DATE: 23-JUN-1997 CLASSIFICATION: 514 PRIOR APPLICATION NUMBER: PCT/IB95/00996 FILING DATE: 13-NOV-1995 PRIOR APPLICATION DATA: APPLICATION NUMBER: US 08/365,486 FILING DATE: 23-DEC-1994 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       53.6%; Score 618; DB 3;
53.6%; Pred. No. 2.4e-64;
tive 31; Mismatches 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME: Sholtz, Charles K.
REGISTRATION NUMBER: 38,615
REFERENCE/DOCKET NUMBER: 8255-0018.30
TELECOMONICATION INFORMATION:
TELEPHONE: (415) 324-0860
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 44, Application US/08023980B
Fatent No. 5843641
GENERAL INFORMATION:
APPLICANT: Brown, Robert
APPLICANT: Brown, Daniel R.
TITLE OF INVENTION: COMPOUNDS AND MET
TITLE OF INVENTION: TREATMENT AND PRE
NUMBER OF SEQUENCES: 45
CORRESPONDENCE ADDRESS:
ADDRESSES: Clark & Elbing LLP
STREET: 585 Commercial Street
CITY: Boston
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
STREET: ADDRESSES:
ADDRESSES:
STREET: ADDRESSES:
ADDRESSES:
STREET: ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDRESSES:
ADDR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 53.63
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE: protein
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY: USA
ZIP: 02109-1024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-08-023-980B-44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-880-342-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
```

```
63 NVTEEKYQEALAKGDVTAQTALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 52, Application US/08486953A

Batent No. 584920

GENERAL INFORMATION:

APPLICANT: Brown, Robert

APPLICANT: Horvitz, H. Robert

APPLICANT: Rosen, Daniel R.

TITLE OF INVENTION: COMPOUNDS AND METHODS FOR THE DIAGNOSIS,

TITLE OF SEQUENCES:

CORRESPONDENCES 53

CORRESPONDENCE ADDRESS:

ADDRESSEE: Clark & Elbing LLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S AVGISRQ--LAPALGYLGSRQKHSLPDLPYDYGALEPHINAQIMQLHSKHHAAYVNNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6 SLSSVSRQTFVAPAAFQI -- RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62; Indels 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             124 AIBESFGSFBAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 53.5%; Score 617; DB 2; Length 222; Best Local Similarity 53.6%; Pred. No. 3.2e-64; Matches 118; Conservative 30; Mismatches 62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATTORNEY/AGENT INFORMATION:
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 00786/177001
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURE...
OPERATING SYSIE...
OPERATION SYSIES SOFTWARE: FASTSEG CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/486,953A
TING DATE: 07-401-1995
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/023,980B
FILING DATE: 26-FEB-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: USA
ZIP: 02110
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SUSTWARE: FASTSGO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/204,052
FILING DATE: 28-FBB-1994
ATTORNEY/AGENT INFORMATION:
```

```
180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5240847-10 ;Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5240847-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (HMN-SOD)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ਨੇ
                                                                                                                                                                                                                                                                                                                4
                                                                                                                                                                                                                                                                                                                                                                                                                       64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                               124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                       6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                10;
                                                                                                                                                                                                                                                                           Length 222,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: THISTER, Anice
APPLICANT: Hohmeier, Hans-Ewald
APPLICANT: Newgard, Christopher B.
APPLICANT: Newgard, Christopher B.
APPLICANT: Shimabukuro, Michio
APPLICANT: Shimabukuro, Michio
APPLICANT: Rhodes, Christopher J.
APPLICANT: Rhodes, Christopher J.
APPLICANT: Rhodes, Christopher J.
APPLICANT: Gousin, Sharon
TITLE OF INVENTION: METHODS AND COMPOSITIONS RELATING
TITLE OF INVENTION: TO NO-MEDIATED CYTOTOXICITY
NUMBER OF SEQUENCES: 20
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                               62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: Patentin Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                             53.5%; Score 617; DB 2;
53.6%; Pred. No. 3.2e-64;
iive 30; Mismatches 62
NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
REFERENCE/DOCKET NUMBER: 00786/223002
TELECOMMUNICATION INFORMATION:
TELEPHONE: 617/428-0200
TELEPAX: 617/428-7045
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/055,092
FILING DATE: 30-UL-1997
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/126,109
FILING DATE: 30-JUL-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Arnold, White & Durkee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 2, Application US/09126109 Patent No. 6171856
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ZIP: 77210
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                              INFORMATION FOR SEQ ID NO: 5
SEQUENCE CHRACATERISTICS:
LENGTH: 222 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 53.6%
Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET: P.O. Box 4433 CITY: Houston
                                                                                                                                                                                     TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STATE: Texas
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                 ;
US-08-486-953A-52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-126-109-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                 TELEX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ωp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

```
86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFDKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63 NVTEEKYQEALAKGDVTAQTALQPALKFNGGGHINHSIFWTNLSPNGGGE----PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGINPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     146 VOGSGWGWLGLNPLTKKLEVTTTANODPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5 AVCGTSRO--LAPALGYLGSROKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6 SLSSVSROTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               52.9%; Score 610; DB 6; Length 198; 56.1%; Pred. No. 1.8e-63; ive 27; Mismatches 54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: HECKL, KONRAD,SPEVAK, WALTER,OSTERMANN, ELINBORG,

ZOPHEL, ANDREAS,KRYSTEK, EBELTRADD,MAURER-FOGY, INGRID;

WICHE-CASTANON, MARIA J. STRATOWA, CHRISTIAN;HAUPIWANN, RUDOLF

TITLE OF INVENTION: HUMAN MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .|:|:||||:||||||:||||| |:||||| |:||||::||||:||||| LGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYMA 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 53.5%; Score 617; DB 3; Best Local Similarity 53.6%; Pred. No. 3.2e-64; Matches 118; Conservative 30; Mismatches 62.
                        FILING DATE: 03-MAR-1998
ATTORNEY/AGENT INFORMATION.
NAME: MCMAILLIAN, NADEGLA R.
REGISTRATION NUMBER: P-43,363
REPERENCE/DOCKET NUMBER: UTSD:560
TELEPHONE: (512) 418-3000
TELEPHONE: (512) 448-3000
TELEPHONE: (512) 44-75-77
INPORMATION FOR SEQ ID NO: 2: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES: 34
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/167,261
FILING DATE: 11-MAR-1988
US Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                         222 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 56.1<sup>§</sup>
Matches 111; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: peptide
   APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                       amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5240847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID NO:10:
LENGTH: 198
                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-126-109-2
                                                                                                                                                                                                                                                                                                                         LENGIH:
```

```
86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120 VQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPLIGIDVWEHAYYLQYRAVVRPDYL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL 85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAABESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 226;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: HECKL, KONRAD;SPEVAK, WALTER;OSTERMANN, ELINB;
;ZOPHEL, ANDERAS;KRYSTEK, EDELTRAUD;MAUBER-POGY, INCRID;
;WICHE-CASTANON, MARIA J.;STRATOWA, CHRISTIAN;HAUPTWANN, RUDOJ
TITLE OF INVENTION: HUMAN MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENY APPLICATION DATR:
APPLICATION NUMBER: US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      52.6%; Score 607; DB 3;
56.1%; Pred. No. 4.9e-63;
tive 26; Mismatches 55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52.6%; Score 606; DB 6;
55.6%; Pred. No. 5.2e-63;
tive 28; Mismatches 54
                           E: Sheridan Ross P.C.
1700 Lincoln St., Suite 3500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 34
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/167,261
FILING DATE: 11-MAR-1988
                                                                                                                                                                                                                                                                                                                                                          ATTORNEY/AGENT INFORMATION:
NAME: KOVARIK, JOSEPH E.
REGISTRATION NUMBER: 33,005
REFRENCE/DOCKET NUMBER: 2048
TELECOMMUNICATION INFORMATION:
TELEPHONE: (303) 863-9700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |:|:|||:
180 KAIWNVINWENVTERYMA 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: (303) 863-0223
INFORMATION FOR SEQ ID NO: 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity 56.1;
Matches 111; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH: 226 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: protein US-09-075-019-7
                                                                                                                                      ZIP: 80203
COMPUTER READABLE FORM:
      CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         amino acid
GY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                                                                    USA
                                                                        Denver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5240847-11
;Patent No. 5240847
                                                                                                                                                                                                                                                                                                                     FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 198
                                                                                               ႘
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
                                                                                          STATE: C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 110;
                                              STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQ ID NO:11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5240847-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (HMN-SOD)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 QPALKPNGGGHINHSIFWINLSPNGGG---PKGELLEAIKRDFGSFDKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        146 VQGSGWGWLGLNPLIKKLEVITIANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 2, Application US/09075019
Patent No. 6190658
GENERAL INFORMATION:
APPLICANT: UTC IR459
TITLE OF INVENTION: A GENETICALLY MODIFIED MANGANESE
TITLE OF INVENTION: SUPEROXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: UTC IR459
TITLE OF INVENTION: A GENETICALLY MODIFIED MANCANESE
TITLE OF INVENTION: SUPEROXIDE DISMUTASE FOR TREATING OXIDATIVE DAMAGE
NUMBER OF SEQUENCES: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHOTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    52.6%; Score 607; DB 3; Length 198
56.1%; Pred. No. 4e-63;
ative 26; Mismatches 55; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                      ADDRESSEE: Sheridan Ross P.C.
STREET: 1700 Lincoln St., Suite 3500
CITY: Denver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US/09/075,019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATTORNEY/AGENT INFORMATION:
NAME: KOVARIK, JOSEPH E.
REGISTRATION NUMBER: 33,005
REFERENCE/DOCKET NUMBER: 2848
TELECOMMUNICATION INFORMATION:
TELEPHONE: (303) 863-9700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 7, Application US/09075019
Patent No. 6190658
178 KAIWNVINWENVTERYMA 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          178 KAIWNVINWENVTERYMA 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEFAX: (303) 863-0223
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      : 198 amino acids
amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity 56.19
Matches 111; Conservative
                                                                                                                                                                                                                                             NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE:
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                 USA
                                                                                                                                                                                                                                                                                                                                                                                                      80203
                                                                                                                                                                                                                                                                                                                                                               ႘
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY:
                                                                                   US-09-075-019-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        us-09-075-019-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-09-075-019-7
                                                                                                                                                                                                                                                                                                                                                          STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 14
```

qq 8 ; 9

```
203 AAVWSVINYKEAEARLQA 220
                                   |:|:|||:
178 KAIWNVINWENVTERYMA 195
             면 상 면
                              S da
   음 참
```

Search completed: March 30, 2004, 17:13:41 Job time: 23 secs

```
March 30, 2004, 17:09:18; Search time 42 Seconds (without alignments) 1383.070 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                        US-09-727-855B-5
1153
1 MSVRASLSSVSRQTFVAPAA......AAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (gnz_6/ptodata/2/pubpaa/US07 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/PCT NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/PCT NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US06 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US06 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/DSO8 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US08 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US08 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US08 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US09 NEW PUB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US10A PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US10A PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US10B PUBCOMB.ppp:*
(cgnz_6/ptodata/2/pubpaa/US10B PUBCOMB.ppp:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /egn2_6/ptodata/2/pubpaa/U310C_PUBCOMB.pep:
/egn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
/egn2_6/ptodata/2/pubpaa/US60_NEW_PUB.pep:*
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                     OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1065169 seqs, 261661801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Published_Applications
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing:
                                                                                                                                                                                                                                                                                                                                               Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence:
                                                                                                                                                                                                             Run on:
```

	Description	Sequence 5, Appli	Sequence 27, Appl	Sequence 7, Appli	Sequence 11, Appl	Sequence 10, Appl	Sequence 22, Appl	20,	Sequence 19, Appl	2332	Sequence 233247,	Sequence 21, Appl	Sequence 662, App	Sequence 26, Appl		Sequence 24, Appl
SUMMAKIES	ID	US-09-727-855B-5	US-10-230-331-27	US-09-727-855B-7	US-10-109-670-11	US-10-109-670-10	US-10-230-331-22	US-10-230-331-20	US-10-230-331-19	US-10-424-599-233245	US-10-424-599-233247	US-10-230-331-21	US-10-310-154-662	US-10-230-331-26	US-10-230-331-25	US-10-230-331-24
	DB	- 6	14	Q	14	14	14	14	14	12	12	14	15	14	14	14
	% Query Match Length DB	222	200	198	224	206	222	222	222	240	241	202	233	235	228	233
	* Query Match	100.0	64.9	64.3	0.09	58.0	55.0	54.6	53.6	52.3	52.3	51.3	51.1	50.8	50.5	48.3
	Score	1153	748.5	741.5	692	668.5	634.5	629.5	618	603.5	602.5	592	589	586	582	556.5
	Result No.		7	m	4	2	9	7	80	6	10	11	12	13	14	15

75,	Sequence 6, Appli	Sequence 5, Appli	7,	4	(-)	Sequence 2, Appli	Sequence 6727, Ap	Sequence 28, Appl	Sequence 6, Appli	Sequence 12947, A	23,	Sequence 663, App		Sequence 7867, Ap		Sequence 59803, A	16,	Sequence 29, Appl	2443		Sequence 59796, A	Sequence 12, Appl	Sequence 188362,	Sequence 233242,	70586,			Sequence 59794, A	Sequence 59362, A
ns		14 US-10-130-973A-5	14 US-10-130-973A-7	14 US-10-130-973A-4	14 US-10-130-973A-3	9 US-09-818-564-2	9 US-09-738-626-6727	14 US-10-230-331-28	9 US-09-987-190-6				15 US-10-310-154-664	12 US-10-335-977-7867	12 US-10-335-977-7868	12 US-10-425-114-59803	US-10-230-331	14 US-10-230-331-29	12 US-10-424-599-244384	12 US-10-424-599-279326	US-10-42	9 US-09-993-333-12	US-10-424-599	12 US-10-424-599-233242	US-10-425-114	12 US-10-425-114-59797	12 US-10-425-114-59795	12 US-10-425-114-59794	12 US-10-425-114-59362
214	887	206	685	862	882	200	200	233	188	213	193	193	201	213	218	257	191	191	293	284	386	95	171	169	175	225	311	240	218
44.5	43.5	43.5	42.9	42.9	42.9	41.5	41.5	40.1	37.3	35.9	29.4	29.4	29.0	28.4	28.4	26.8	26.5	26.5	26.0	25.2	22.4	22.1	21.3	20.1	19.7	19.3	17.0	16.6	16.5
513.5	202	502	495	495	495	479	479	462	430.5	414	339.5	339.5	334	327.5	327.5	309.5	305	305	300	290	258	255	246	232	227.5	222	195.5	191	190.5
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45

ALIGNMENTS

```
MANUFACTURE OF CAROTENOIDS AND BIOLOGICALLY USEFUI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121 LKKAIBESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121 LKKAIEBSFGSFEAFKKKFNADTAAVOGSGWGWLGLNPLTKKLEVTTTANODPLLTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 NGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEATLSEGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 NGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 100.0%; Score 1153; DB 9; Length 222; Best Local Similarity 100.0%; Pred. No. 4e-114; Matches 222; Conservative 0; Mismatches 0; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQAAL 222
                                         GENERAL INFORMATION:
APPLICANT: HOSHINO, Tatsuo
APPLICANT: OJINA, Kazuyuki,
APPLICANT: SETOGUCHI, Yutaka
IITLE OF INVENTION: PROCESS FOR THE MANUFACTU
TITLE OF INVENTION: MATERIALS THEREOF
FILE REFERENCE: C38435/111694
CURRENT APPLICATION NUMBER: US/09/727,855B
Sequence 5, Application US/09727855B Patent No. US20020168703A1
                                                                                                                                                                                                                                                                                      PatentIn version 3.1
                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT
ORGANISM: Phaffia rhodozyma
                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 17
                                                                                                                                                                                                                                                                NUMBER SOFTWARE: Pater SEQ ID NO 5
                                                                                                                                                                                                                                                                                                                                                                                                        US-09-727-855B-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
```

```
ij
                                               204
                                                                                                                                    119 GVQGSGWGWLGYNTATKHLEIATTANQDPLITLTPIIGLDIWEHAFYLQYKNVKDDYLAA 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 67 BESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSBEATLSBGPLKKAIE 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66 EDKLIDALPQQSPLGEIAQLNAIKFNGGGHINHSLFWKNLAPTNKGGGELDSGELRSAID 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    127 ESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIW 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85 LOSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIBESFGSFEAFKKKFNADTA 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65
                                                                                                         145 AVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDYLAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 TRRAAAAPLANAAQMGVRTKYTLPPLPYDYGALEPAISGEIMETHYEKHHRTYVNNLNAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11 SRQTFVAP----AAFQIRAKHTLFELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .;
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              58.0%; Score 668.5; DB 14; Length 206; 63.1%; Pred. No. 1.2e-62; cive 24; Mismatches 47; Indels 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 10, Application US/10109670
Publication No. US20030105283A1
Publication No. US20030105283A1
APPLICANT: TAKESAKO, KAZUTOH et al.
TITLE OF INVENTION: ANTIGENIC PROTEIN ORGINATING IN MALASSEZIA
FILE REFERENCE: 1422-0523P
CURRENT APPLICATION NUMBER: US/10/109,670
CURRENT FILING DATE: 2002-04-01
                                                                                                                                                                                                                                                                                                                                   Sequence 11, Application US/10109670
Publication No. US20030105283A1
GENERAL INFORMATION:
APPLICANT: TAKESAKO, KAZUTOH et al.
ITILE OF INVENTION:
FILE REFERENCE: 1422-0523P
CURRENT APPLICATION NUMBER: US/10/109,670
CURRENT FILING DAFE: 2002-04-01
NUMBER OF SEQ ID NOS: 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EHAFYLQYKNVKADYFKAIWTVINFBEAEKRLKEAL 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 60.0%; Score 692; DB 14; Best Local Similarity 59.3%; Pred. No. 4.4e-65; Matches 128; Conservative 31; Mismatches 53;
                                                                                                                                                                                                                       205 UWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT; ORGANISM: Malassezia furfur
US-10-109-670-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; ORGANISM: Malassezia furfur
US-10-109-670-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 63.14
Matches 123; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 5
US-10-109-670-10
                                                                                                                                                                                                                                                                                                                          US-10-109-670-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ ID NO 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    186
                                                            g
                                                                                                                                                 원
                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                           \delta
                                                                                                                                                                                              \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 7. Application US/09727855B
Patent No. US20020168703A1
GENERAL INFORMATION:
APPLICANT: HOSHINO, Tatsuo
APPLICANT: SETOGUCHI, Yutaka
TITLE OF INVENTION: MATERIALS THEREOF
FILE REFERENCE: C34435/11694
CURRENT APPLICATION NUMBER: US/09/727,855B
CURRENT FILING DATE: 2000-12-01
NUMBER OF SEQ ID NOS: 17
SOFTWARE: Patentin version 3:1
SEQ ID NO 7
                                                                                                                                                                                            APPLICANT: RAJASEKHARAN, Ram
TITLE OF INVENTION: A NOVEL TRIACYLGLYCEROL BIOSYNTHESIS IN THE CYTOSOL OF BUKARYOTES
TILE REFERENCE: 1105.22
CURRENT APPLICATION NUMBER: US/10/230,331
CURRENT FILING DATE: 2002-08-29
PRIOR PILING DATE: 2001-08-30
NUMBER OF SEQ ID NOS: 42
SOFTWARE: PATENTIN VERSION 3.2
LENGTH: 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ы
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86 QSALKFNGGGHINHSLFWKNLAPYGSE----EATLSEGPLKKAIEESFGSFEAFKKKFNA 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59 QSALKFNGGGHINHSLFWKNLAPAKSEGKGNGGALADGPLKSAIEQNWGSVDNFIKEFNA 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             119 TTAAIQGSGWGWLGLNPATKRLEITTTANQDPLLSHVPIIGVDIWEHAFYLQYLNVKADY 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.42 DTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDY 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3 HVLPDLPYAYNALEPFISQQIMELHHKKHHQTYVNSLNAAEQAYAKASTPKE----RIAL 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       25 AKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVK 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2 APYTLPDLPYAYDALEPYISKEIMILHHSKHHQTYVTNLNAAIQAFSQT---NDIKAQIA 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27 HTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYS-AAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 14; Length 200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64.9%; Score 748.5; DB 14; Length 71.6%; Pred. No. 3.6e-71; Live 24; Mismatches 23; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64.3%; Score 741.5; DB 9; Length 69.7%; Pred. No. 2e-70; ive 20; Mismatches 37; Indels
Sequence 27, Application US/10230331
Publication No. US20030157513A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                     ; TYPE: PRT
; ORGANISM: Ganoderma microsporum
US-10-230-331-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         202 LAAVWSVINYKEAEARL 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |||:|| |||:|| |||
|179 LAAIWIVINFKEAERRL 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: PRT
ORGANISM: Phaffia rhodozyma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 64.33
Best Local Similarity 69.73
Matches 138; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 64.9
Best Local Similarity 71.6
Matches 141; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 3
US-09-727-855B-7
                                                                                                             US-10-230-331-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-727-855B-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
```

3

```
Sequence 19, Application US/10230331

Publication No. US20030157513A1

GENERAL INFORMATION:

APPLICANT: RAJASERHARAN, Ram

TITLE OF INVENTION: A NOVEL TRIACYLGIYCEROL BIOSYNTHESIS IN THE CYTOSOL OF EUKARYOTES

TITLE OF INVENTION: A NOVEL TRIACYLGIYCEROL BIOSYNTHESIS IN THE CYTOSOL OF EUKARYOTES

CURRENT PERERRENCE: 110522

CURRENT PELING DATE: 2002-08-29

PRIOR APPLICATION NUMBER: US 60/315,757

PRIOR APPLICATION NUMBER: US 60/315,757

NUMBER OF SEQ ID NOS: 42

SOFTWARE: Patentin version 3.2
                                                                                                                                                                                                                                                                                               61 NGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                      60 NNLNVABEKYREALEKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PQGE 116
                                                                                                                                                                                                                                                                                                                                                                                   LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTH 177
                                                                                                                                                                                                                                                                                                                                                                                                              66 AEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  126 BESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIG 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65 TEEKYQEALAKGDVTAQIALQPALKFNGGGHINHAIFWTNLSPNGGGE---PKGELLEAI 121
                                                                                                                                                                                                                                         1 MLSRAACST-SRRLVPALSVLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYV 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               122 KRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPLLG 181
                                                                                                                                                                                                         1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5 AVCGISROLAPALGVLGSROKHSLPDLPYDYGALEPHINAQIMOLHHSKHHAAYVNNLNV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6 SLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNA
                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 222;
                                                                                                                                                                   63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      183 VDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                     DB 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       53.6%; Score 618; DB 14; 52.8%; Pred. No. 3.2e-57;
                                                                                                                   54.6%; Score 629.5; DB 1454.3%; Pred. No. 1.9e-58;
                                                                                                                                                                32; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    30; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 232245, Application US/10424599 Publication No. US20040031072A1 GENERAL INFORMATION:
APPLICANT: La Rosa Thomas J
                                                                                                                                          Best_Local Similarity 54.33
Matches 121; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 52.8
Matches 115; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; ORGANISM: Homo sapiens
US-10-230-331-19
                               ; TYPE: PRT
; ORGANISM: Bos taurus
US-10-230-331-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 9
US-10-424-599-233245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 8
US-10-230-331-19
             LENGTH: 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 19
                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                 dd
                                                                                                                                                                                                                                                                                                                                                                                 \delta
                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 엄
                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 22, Application US/10230331

Publication No. US20030157513A1

GENERAL INFORMATION:

APPLICANT: BAJASEKHRAN, Ram

TITLE OF INVENTION: A NOVEL TRIACYLGLYCROL BIOSYNTHESIS IN THE CYTOSOL OF EUKARYOTES

CURRENT APPLICATION NUMBER: US/10/230,331

CURRENT APPLICATION NUMBER: US 60/315,757

PRIOR PILING DATE: 2002-08-29

PRIOR FILING DATE: 2001-08-30

NUMBER OF SEQ ID NOS: 42

SOFTWARE: Patentin version 3.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 20, Application US/10230331
Publication No. US20030157513A1
GENERAL INFORMATION:
GENERAL INFORMATION:
TITLE OF INVENTION: A NOVEL TRIACYLGLYCEROL BIOSYNTHESIS IN THE CYTOSOL OF BUKARYOTES
FILE REFERENCE: 110522
                                                                                                              63 IQLQSAIKENGGGHINHSLFWKNLAPQSEGGGQLNDGPLKQAIEQEFGDFEKFKTTFNTK 122
                                                                                                                                                                         143 TAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                  VKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNAD 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           119 GPLKKAIBESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---L 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59 YVNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGCHINHSLFWKNLAPYGSEEATLSE 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23 IRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQ 82
                               57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MSVRASLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 14; Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          176 THIPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEAR 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 55.0%; Score 634.5; DB 14; Best Local Similarity 55.4%; Pred. No. 5.6e-59; Matches 123; Conservative 30; Mismatches 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/10/230,331
CURRENT FILING DATE: 2002-08-29
PRIOR APPLICATION NUMBER: US 60/315,757
PRIOR FILING DATE: 2001-08-30
NUMBER OF SEQ ID NOS: 42
SOFTWARE: Patentin version 3.2
SEQ ID NO 20
                                                                                                                                                                                                                                                             203 AAVWSVINYKEAEAR 217
                                                                                                                                                                                                                                                                                           , ORGANISM: Rattus rattus
US-10-230-331-22
                                                                                                                                                                                                                                                                                                                                                                                            US-10-230-331-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-230-331-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 22
LENGTH: 222
                                                                                      83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: PRT
                                           8
                                                                                      8
                                                                                                                        a
                                                                                                                                                                       à
                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
```

64

```
Sequence 21, Application US/10230331
Publication No. US20030157513A1
GENERAL INFORMATION:
APPLICANT: RAJASEMETARN, Ram
TITLE OF INVENTION: A NOVEL TRIACYLGLYCEROL BIOSYNTHESIS IN THE CYTOSOL OF EUKARYOTES
TITLE OF INVENTION: A NOVEL TRIACYLGLYCEROL BIOSYNTHESIS IN THE CYTOSOL OF EUKARYOTES
TITLE OF INVENTION WIMBER: US/10/230,331
CURRENT APPLICATION NUMBER: US 60/315,757
PRIOR APPLICATION NUMBER: US 60/315,757
PRIOR FILING DATE: 2001-08-30
NUMBER OF SEQ ID NOS: 42
SOFTWARE: Patentin version 3.2
SEQ ID NO 21
LENGTH: 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                66 QPALKFKGGGHINHTIFWTNLSPNGGGE---PKGELLEAIKRDFGSFDKFKERLTAVSVG 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              146 VQCSCWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 115 TLSEGPLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL 174
                    26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 202;
                                                                      214
                                                                                            Indels
                                                                      175 LTH----IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  51.3%; Score 592; DB 14;
ilarity 54.5%; Pred. No. 1.6e-54;
Conservative 29; Mismatches 55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 12
US-10-310-154-662
Sequence 662, Application US/10310154
Publication No. US20030233670A1
GENERAL INPORMATION:
APPLICANT: Edgerton, Michael D
APPLICANT: Adams, Thomas H
APPLICANT: Ruff, Thomas G.
APPLICANT: Ruff, Thomas G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         183 KAIWNVITWENVTERYMA 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ) ORGANISM: Oryctolagus cuniculus US-10-230-331-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Boddupalli, Raghava
Deikman, Jill
Deng, Molian
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hinchey, Brenda S.
Huang, Shihshieh
Johnson, G. Richard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Duff, Stephen M.
Galligan, Meghan M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Agarwal, Ameeta K. Ahrens, Jeffrey E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ball, James A.
Banu, G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Jinzhuo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bell, Erin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
Matches 108; Conserv
                                                                                                                                                                                 US-10-230-331-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT
APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      \stackrel{>}{\circ}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                           g
                                 음
                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Zhou Yihua APPLICANT: Zhou Yihua APPLICANT: Zhou Yihua APPLICANT: Zhou Yihua APPLICANT: Cao Yongwei TITLE OF INVENTION: Soy Nucleic Acid Molecules and Other Molecules Associated With TITLE OF INVENTION: Plants and Uses Thereof for Plant Improvement FILE REPERENCE: 38-21(51223) B CURRENT APPLICATION NUMBER: US/10/424,599
CURRENT FILING DATE: 2003-04-28
NUMBER OF SEQ ID NOS: 285684
SEQ ID NO 233245
LENGTH: 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3;
                                                                                                                                                                                                                                                                                                                                             3
                                                                                                                                                                                                                                                                                                                                                                                                                                                     107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       55 HHQTYVNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEA 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4 RASLSSVSRQ-----TFVAPAAFQIRAKH--TLPELPYAYDALEPSISKEIMTLHHTK 54
                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         108 PYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTT
                                                                                                                                                                                                                                                                                                                                                                                                                1 MAARALLTRKTLATVLRNDAKPIIGAGIAAATHSRGLHVYTLPDLDYDYGALEPAISGEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                   48 MILHHIKHHQIYVNGLNAAEESYSAAVGKEDVLIQVKLQSALKFNGGGHINHSLFWKNLA
                                                                                                                                                                                                                                                                                                                                                                               1 MSVRASLSSVSRQTFV------APAAFQIRAKH--TLPELPYAYDALEPSISKEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13; Gaps
                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               168 TANODPLITH----IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           52.3%; Score 602.5; DB 12; Length 241; 53.6%; Pred. No. 1.6e-55; lindels 13; ive 29; Mismatches 62; Indels 13;
                                                                                                                                                                                                                                                                                                          52.3%; Score 603.5; DB 12; Length 240; 52.8%; Pred. No. 1.2e-55; ive 28; Mismatches 64; Indels 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; OTHER INFORMATION: Clone ID: PAT_MRT3847_52648C.1.pep
US-10-424-599-233247
                                                                                                                                                                                                                                                          OTHER INFORMATION: Clone ID: PAT MRT3847 52646C.1.pep
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 52.39
Best Local Similarity 53.69
Matches 120; Conservative
              Kovalic David K
                                                                                                                                                                                                                                                                                                                               Best Local Similarity 52.8
Matches 122, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM: Glycine max
                                                                                                                                                                                                          TYPE: PRT
ORGANISM: Glycine max
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
US-10-424-599-233247
                                                                                                                                                                                                                                                                             US-10-424-599-233245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 233247
LENGTH: 241
                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                                                                                                                                                                              FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
```

7

85 65

```
APPLICANT: RAJASEKHARAN, Ram
TITLE OF INVENTION: A MOVEL TRIACYLGLYCEROL BIOSYNTHESIS IN THE CYTOSOL OF EUKARYOTES
CURRENT APPLICATION NUMBER: US/10/230,331
CURRENT FILING DATE: 2002-08-29
PRIOR APPLICATION NUMBER: US 60/315,757
                                                                                                                                                                                                                                                                                     148 GSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPIIGVDIWEHAFYLQYKNVKPDYLA 203
                                                                                                                                                                                                                                                                                                                                                   88 ALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAAVQ 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             67 ALQOLHDAINKGDSPTVAKLQGAIKFNGGGHINHSVFWKNLAPTREGGGEPPKGSLGSAI 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             126 BESFGSFBAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPII 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66 AEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   65
                                                                                                                                                                                                    28 TLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKLQS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10 VSRQTFVAPAAF--QIRAKHT--LPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .,
8
                                                                                                                                   Length 235;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 228;
                                                                                                                                                                     53; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 582; DB 14;
; Pred. No. 2.2e-53;
30; Mismatches 61;
                                                                                                                                 50.8%; Score 586; DB 14;
57.6%; Pred. No. 8.8e-54;
iive 24; Mismatches 53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    182 GVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 25, Application US/10230331
Publication No. US20030157513A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 15
US-10-230-331-24
; Sequence 24, Application US/10230331
NUMBER OF SEQ ID NOS: 42
SOFWARE: PatentIn version 3.2
SEQ ID NO 26
LENCTH: 235
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 42
SOFTWARE: PatentIn version 3.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 53.5%;
Matches 114; Conservative 3
                                                                                                                                                                 Matches 110; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                 204 AVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                     216 NIWKVMNWKYA 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORGANISM: Capsicum annuum
                                                                                                                                                    Best Local Similarity
                                                                                ORGANISM: Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-230-331-25
                                                                                                    US-10-230-331-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-230-331-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID NO 25
LENGIH: 228
                                                                                                                                    Query Match
                                                                                                                                                                                                    à
                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                 Оp
                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    54 KHHQTYVNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEE 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60 KHHATYVANYNKALEQLDAAVAKGDASAVVQLQGAIKFNGGGHVNHSIFWKNLKPISEGG 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               114 ATLSEGPLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDP 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MALR-TLASKNALSFALGGAARPSAASARGVTTVALPDLSYDFGALEPAISGEIMRLHHQ 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MSVRASLSSVSRQTF----VAPAAFQIRAKHT--LPELPYAYDALEPSISKEIMTLHHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             12; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;; Score 589; DB 15; Length 233;
;; Pred. No. 4.2e-54;
30; Mismatches 64; Indels 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE OF INVENTION: Gene Sequences and Uses Thereof in Plants FILE REFERENCE: 38-15/52796)B
CURRENT APPLICATION NUMBER: US/10/310,154
CURRENT FILING DATE: 2002-12-04
PRIOR APPLICATION NUMBER: 60/337,358
PRIOR FILING DATE: 2001-12-04
NUMBER OF SEQ ID NOS: 736
SEQ ID NO 662
LENGTH: 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         174 LLTH----IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            McKiel, Christine L.
Miller, Philip W.
Padmavathi, Manchikanti
Parnell, Laurence D.
Start, William G.
Tennesen, Dan
               Kretzmer, Keith A
Laccetti, Lucille B.
Lai, Chao-Qiang
                                                                                                                                                                             Malloy, Kathleen A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          51.1%;
52.9%;
                                                                                                                               Michael M.
                                                                                                                                                              Madson, Linda L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 52.9
Matches 119, Conservative
                                                                                                                                                                                                                                                                                                                                                             Yang, Chunzhi
Zeng, Xiaoping
                                                                                                 Jingdong
                                                                                                                                                                                                                                                                                            Vidya, K.R.
Wang, Haiyun
Xin, Zhanguo
Xu, Nanfei
Jung, Vincent
                                                                                                                                                                                                                                                                                                                                                                                             Zhang, Qiang
Zhao, Yajuan
Zhou, Li
                                                                                                                                               Lund, Adrian
                                                                              Lin, Jie-Yi
                                                                  Lee, Gary
                                                                                                              Lu, Bin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; TYPE: PRT
; ORGANISM: Zea mays
US-10-310-154-662
                                                                                                                              Luethy,
                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                               APPLICANT
                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT
```

엄 à 엄 ð ò

us-09-727-855b-5.rapb

```
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICATURE NATURE AND RAM
THE CATLE OF INVENTED IN THE CYTOSOL OF EUKARYOTES
FILE REFERENCE: 11052
CURRENT APPLICATION NUMBER: US/10/230,331
CURRENT APPLICATION NUMBER: US/0/230,331
CURRENT APPLICATION NUMBER: US 60/315,757
PRIOR FILING DATE: 2001-08-30
NUMBER OF SEQ ID NOS: 42
SOFTWARE: PATENTIN VERSION 3.2
SEQ ID NO 24
LENGTH: 233
TYPE: FRT
TYPE: FRT
CREANISM: Pisuum sativum
US-10-230-331-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56 HQTYVNGLNAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEAT 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              116 LSEG---PLKK----AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGINPLTKKLEVTTT 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4 RASLSSVGRQ-----TFVAPAAFQIRAKH--TLPELPYAYDALEPSISKEIMTLHHTKH 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match

48.3%; Score 556.5; DB 14; Length 233;
Best Local Similarity 52.6%; Pred. No. 1.2e-50;
Matches 121; Conservative 28; Mismatches 48; Indels 33; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            169 ANODPLLTH----IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
```

Search completed: March 30, 2004, 17:11:53 Job time: 43 secs

Q8hxp7 pan troglod C8hxp6 pongo pygma Q727m7 homo sapien Q947x3 raphanus sa Q727m5 homo sapien Q8hxp1 cebus apell C8hxp1 cebus apell C8hxp1 cebus apell C9sm64 prunus pers Q95m64 prunus pers Q95m3 digitalis 1 Q84v26 avicennia m Q96185 triticum ae Q43121 oryza sativ Q43121 oryza sativ Q95xb5 hevea brasi Q95xb6 sapergillus Q97xb6 sapergillus Q97xb6 sapergillus Q97xb5 ganoderma l

610 52.9 199 6 QBHXP7 610 52.9 199 6 QBHXP6 608 52.7 213 4 Q727M7 608 52.7 231 10 Q947R3 607 52.6 209 4 Q727M5	606 52.6 231 10 605 52.5 199 6 605 52.5 199 6 604 52.4 220 5 600 52.0 228 10	51.9 237 3 Q873M4 C 51.7 224 10 Q9FY33 51.7 226 10 Q84V26 51.7 231 10 Q96485 51.2 231 10 Q43121	590.5 51.2 231 10 Q43803 Q43803 587 50.9 231 10 P93606 P93606 584 50.7 235 10 Q43273 Q43273 581 50.4 205 10 O95TB5	581 50.4 205 10 Q9FSJ2 Q9f8j2 574 49.8 234 10 Q84W70 Q84W70	574 49.8 240 10 082584 082584 082584 574 49.8 241 10 09LYK8 091YK8 571.5 49.6 216 10 09FY32 09FY32 09FY32	570.5 49.5 224 10 082571 082571 082571 562571 230 3 0874B1 0874B1 0874B1 0874B1 0877B6 555.5 48.3 142 3 092464 092464	555.5 48.2 142 3 092425 ALIGNMENTS		AC 096W28. DT 01-DEC-2001 (TrEMBLrel. 19, Created) DT 01-DEC-2001 (TrEMBLrel. 19, Last sequence update) DT 01-OCT-2003 (TrEMBLrel. 25, Last annotation update) DR Manganese superoxide dismutase (EC 1.15.1.1) (Superoxide dismutase	NCPI_TaxID=5306; [SIDURINCE FROM N.A. STRAIN=BKM-F-1767;		-:- FUNCTION: LESTROYE KADICALS WHICH ARE NORMALLY PRODUCED WITHIN THE CELLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY). C -!- CATALYTIC ACTIVITY: 2 SUPEROXIDE + 2 H(+) = 0(2) + H(2)0(2). C -!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE FAMILY.		GO; GO; Into Pfar
version 5.1.6 - 2004 Compugen Ltd.	(without alignments) 1556.556 Million cell updates/sec	AAVWSVINYKEAEARLQAAL 222	residues	chosen parameters: 1017041		ries		E O H		results predicted by chance to have a . to the score of the result being printed, of the total score distribution.	SUMMARIES R R Description R	Q96w28 phanerochae Q9y773 paxillus in Q9y744 gallus gall Q9ddil callus aall	Q802d9 melopsittac Q9nb66 callinectes Q727M4 homo sapien Q96ee6 homo sapien Q8hxp4 macaca fusc	Q8hxp3 macaca fasc Q8hxp2 macaca mula Q7z7m6 homo sapien Q7xm5 apis mellif O65324 raphanus sa Q9m532 euphorbia e Q8hxp5 hylobates l
GenCore ve Copyright (c) 1993 - OM protein - protein search using ou m	on: March 30, 2004, 17:09	Score: 1153 e: 1 MSVRA	Scoring table: BLOSUM62 Gapop 10.0 , Gapext 0.5 Searched: 1017041 seqs, 315518202	Total number of hits satisfying chosen	Minimum DB seq length: 0 Maximum DB seq length: 200000000	Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries	Ωu		9: sp_phage:* 10: sp_phat:* 11: sp_rodent:* 12: sp_virus:* 13: sp_vertebrate:*	 Pred. No. is the number of result; score greater than or equal to the and is derived by analysis of the	Result Query No. Score Match Length DB ID	751.5 65.2 206 739.5 64.1 206 644.5 55.9 224 643.5 55.8 224	637.5 55.3 224 13 625.5 54.2 218 5 616 53.4 222 4 615 53.3 199 6	10 615 53.3 199 6 QBRXP2 12 614 53.3 199 6 QBRXP2 13 614 53.3 210 4 Q7Z7M6 14 614 53.3 218 5 QYXXM5 15 612.5 53.1 237 10 Q9MS32 16 611 53.0 199 6 QBRXP5

```
140;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                             82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          090Y34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   090Y34
  Matches
                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOW WE WANTED THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                          g
                                                                              g
                                                                                                                                                              8
                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                  à
                                            à
                                                                                                                             Š
                                                                                                                                                     э;
                                                                                                                                                                                                                                                                                                                                                                                           120 TTTAAIQGSCWGWLGYNPSSKRVELATTANQDPLLTHVPLIGVDIWEHAFYLQYLNVKAD 179
                                                                                                                                                                                                                                                                                85 LQSALKFNGGGHINHSLFWKNLAPYGSE----BATLSEGPLKKAIEESFGSFEAFKKKFN 140
                                                                                                                                                                                                                                                                                                               200
                                                                                                                                                                                             26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYS-AAVGKEDVLTQVK 84
                                                                                                                                                                                                                                      59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                involutus.";
Submitted (DEC-1998) to the EMBL/GenBank/DDBJ databases.
Submitted (DEC-1998) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: DESTROYS RADICALS WHICH ARE NORMALLY PRODUCED WITHIN THE CELLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: 2 SUPEROXIDE + 2 H(+) = O(2) + H(2)O(2).
-!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE
FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Jacob C., Courbot M., Botton B., Chalot M., "Cloning and sequencing of a full-length cDNA encoding the manganese superoxide dismutase precursor of the ectomycorrhizal fungus, Paxillus
                                                                                                                                                                                                                                      ----RIA
                                                                                                                                                                                                                                                                                                                                                                     141 ADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPD
                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bukaryota, Fungi, Basidiomycota, Hymenomycetes, Homobasidiomycetes;
Boletales, Paxilineae; Paxillaceae; Paxillus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
Manganese-superoxide dismutase (EC 1.15.1.1) (Superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GO; GO:0004785; F:copper, zinc superoxide dismutase activity; IEA. GO; GO:0008382; F:iron superoxide dismutase activity; IEA. GO; GO:0008383; F:ironganese superoxide dismutase activity; IEA. GO; GO:0046872; F:metal ion binding; IEA. GO; GO:0016594; F:metal ion binding; IEA. GO; GO:0016594; F:mickel superoxide dismutase activity; IEA. GO; GO:0016491; F:oxidoreductase activity; IEA. GO; GO:0016801; P:superoxide metabolism; IEA. InterPro; IPR001189; SODismutase. Pfam; PR00777; sodfe. C: 1.
                                                                                                                                                     6
                                                                                                                                                                                                                        Length 206;
                                                                                                             DB 3; Length 206;
                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22696 MW; 7F1CGESIFF1AE0F5 CRC64;
                                                                   63625CCFBD44A290 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 3;
                                                                                                                                                     27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 739.5; DB 3
Pred. No. 5.2e-59;
                                                                                                                                 Pred. No. 4.2e-60;
                                                                                                                                                     25; Mismatches
                                                                                                             Score 751.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                          201 YLAAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRINTS; PR01703; MNSODISMTASE.
ProDom; PD000475; SODismutase; 1.
      PS00088; SOD_MN; 1.
                                                                     206 AA; 22860 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64.1%;
69.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PROSITE; PS00088; SOD MN; 1.
                                                                                                             65.2%;
69.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AF114848; AAD25353.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (TrEMBLrel. 12,
                                                                                                                                                     Matches 141; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P04179; 1ABM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A. STRAIN=ATCC 200175;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 206 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Paxillus involutus.
                                                                                                                                 Similarity
      PD000475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=71150;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Oxidoreductase
                          PROSITE; PS000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-NOV-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           [Mn/Fe]).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                            4
                                                                                                                                                                                                                                                                                                                               60
                                                                       SEQUENCE
                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  187779;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             £7779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HSSP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
        S KW DR
                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                     à
```

```
3,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120 PLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LT 176
                                                                                                                                                                                                                                                 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            117
                                                                                                                                                                           60 LQAALRENGGGHINHSLFWKNLAPAASEGKGKGGELKPGFLKDAIDSNFGSLDSLKKEFN 119
                                                                                                                                                                                                                                                                             LOSALKFNGGGHINHSLFWKNLAPYGSE----EATLSEGPLKKAIEESFGSFEAFKKKFN 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             59
                                              26 KHILPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYS-AAVGKEDVLTQVK 84
                                                                                                  59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MICKLASAGRSRAALVAPLGCLVARQKHTLPDLPYDYGALEPHISAEIMQLHHSKHHATY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60 VNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 VNNLNVTEEKYKEALAKGDVTAQVSLQPALKFNGGGHINHTILWTNLSPSGGGE---PKG
                                                                             4 QHTLPDLPYSYDALEPYVSQQIMTLHHKKHQTYVTALNAAEVSYAKTATPKE----RIA
                                                                                                                                                                                                                                                 141 ADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MSVRASLSSVSRQTFVAPAAFQI-RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Archosauria, Aves, Neognathae, Galliformes, Phasianidae, Phasianinae,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL, AF299388; AAK97214.1; -. GO, GO:0004785; F:copper, zinc superoxide dismutase activity; IEA. GO, GO:0004785; F:copper, zinc superoxide dismutase activity; IEA. GO; GO:0008382; F:iron superoxide dismutase activity; IEA. GO; GO:0008383; F:manganese superoxide dismutase activity; IEA. GO; GO:0016954; F:mickel superoxide dismutase activity; IEA. GO; GO:0016491; F:coxidoreductase activity; IEA. GO; GO:0016491; F:coxidoreductase activity; IEA. InterPro; IPR01189; SODismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7;
     ٠.
ه
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 13; Length 224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity 54.9%; Pred. No. 2.4e-50;
Matches 123; Conservative 30; Mismatches 64; Indels
     32; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24770 MW; A18570FC736BD3DD CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
MNSOD (EC 1.15.1.1) (Superoxide dismutase [Mn/Fe]).
Gallus gallus (Chicken).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               224 AA
     21; Mismatches
                                                                                                                                                                                                                                                                                                                                                      201 YLAAVWSVINYKEAEARLQAAL 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF02777; sodfe C; 1.
PRINTS; PR01703; MNSODISMTASE.
PRODOM; PD000475; SODismutase; 1.
PROSITE; PS00088; SOD_MN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                       180 YLNAIWSVINFKEAEKRFTEGL
       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 224 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gallus.
NCBI_TaxID=9031;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Oxidoreductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  \delta
```

```
SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q9NB66;
Q9NB66;
                                                                                          Q802D9
                                                                  RESULT 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 6
                                                                                Q802D9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q9NB66
                          d
                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3,
60 VNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEG 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120 PLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LT 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                  Dismutase (MnSOD) CDNA of Chicken.";
Submitted (DEC-2000) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: DESTROYER RADICALS WHICH ARE NORMALLY REODUCED WITHIN THE
CELLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: 2 SUPEROXIDE + 2 H(+) = O(2) + H(2)O(2).
-!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                                                                                                                                                                    J.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                M.C.R.Lasagesraalvapwgclvarqutlpdlpydygalephisaeimolhhskhhaty
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 VNNLNVTEEKYKEALAKGDVTAQVSLQPALKFNGGGHINHTIFWTNLSPSGGGE---PKG
                                                                                                                                                                                                                                         Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MSVRASLSSVSRQTFVAP-AAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HSSP; P04179; JABM.

GO; GO:0004785; F:copper, zinc superoxide dismutase activity; IEA.

GO; GO:0008382; F:iron superoxide dismutase activity; IEA.

GO; GO:0008383; F:marganese superoxide dismutase activity; IEA.

GO; GO:0016854; F:metal ion binding; IEA.

GO; GO:0016854; F:nickel superoxide dismutase activity; IEA.

GO; GO:0016854; F:oxidoreductase activity; IEA.

GO; GO:0016891; P:oxidoreductase activity; IEA.

GO; GO:0016891; P:oxidoreductase activity; IEA.

InterPro; IPR001189; SODismutase.
                                                                                                                                                              01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
01-0CT-2003 (TrEMBLrel. 25, Last annotation update)
Manganese-containing superoxide dismutase precursor (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                      "Cloning and Sequence Analysis of Manganese-containing Superoxide
                                                                                                                                                                                                                                                                                                                      Bu Y.Q., Luo X.G., Li S.F., Lu C., Li Y.W., Kuang X., Liu B., Li Yu S.X.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 13; Length 224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MANGANESE-CONTAINING SUPEROXIDE
                                      177 HIPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           55.8%; Score 643.5; DB 13; July 25.9%; Pred, No. 3e-50; Indels
                                                    1192114C7266687F CRC64;
                                                                                                                               224 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54.9%; Pred. ....tive 28; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DISMUTASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                POTENTIAL.
                                                                                                                                                      Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRINTS; PR01703; MNSÖDISMTASE.
ProDom; PD000475; SODISMUtase; 1.
PROSITE; PS00088; SOD MN; 1.
                                                                                                                                                                                                      (Superoxide dismutase [Mn/Fe]).
                                                                                                                                                                                                                                                                                                                                                                                                                                                          AF329270; AAG46055.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24946 MW;
                                                                                                                                                    (TrEMBLrel. 16,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF00081; sodfe; 1.
Pfam; PF02777; sodfe_C; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 123; Conservative
                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                            Gallus gallus (Chicken).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Oxidoreductase; Signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   224 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                               NCBI_TaxID=9031;
                                                                                                                                                                                                                                                                                                                   TISSUE=Heart
                                                                                                                                        Q9DDJ1;
01-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEOUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                            090071
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL;
                                                                                                   RESULT 4
                                                                                                                170060
                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Пþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
```

```
64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NVAEEKYKEALAKGDVTAQVSLQPALKFNGGGHINHTIFWTNLSPNGGGE---PKGELMD 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7 LSSVSRQT--FVAP-AAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-OCT-2000 (TrEMBLrel. 15, Created)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last amnotation update)
Mitochondrial manganese superoxide dismutase precursor (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                   Melopsittacus undulatus (Budgerigar).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Archosauria; Aves; Neognathae; Psittaciformes; Psittacidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               55.3%; Score 637.5; DB 13; Length 224; 56.4%; Pred. No. 1e-49; ive 25; Mismatches 62; Indels 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota, Metazoa, Arthropoda, Crustacea, Malacostraca,
Eumalacostraca, Eucarida, Decapoda, Pleocyemata, Brachyura,
Eubrachyura, Portunoidea, Portunidae, Callinectes.
177 HIPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                               178 LIPLIGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVSQRYES 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Austad S.N., Carlberg K.;
"Melopsittacus undulatus Mn superoxide dismutase (SOD2)
Submitted (FEB-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AX2413942, F.mc72712.1;
GO, GO:0046872; F.mctal ion binding; IEA.
GO, GO:0004784; F:superoxide dismutase activity; IEA.
GO, GO:0008001; P:superoxide metabolism; IEA.
InterPro; IPR01189; SODismutase.
Pfam; PF00081; sodfe_C; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                            Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          218 AA
                                                                                                                                                                                                                                                  Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (Superoxide dismutase [Mn/Fe]). Callinectes sapidus (Blue crab).
                                                                                                                                                                                                                                            01-JUN-2003 (TrEMBLrel. 24, 01-JUN-2003 (TrEMBLrel. 24, 01-OCT-2003 (TrEMBLrel. 25, Mn superoxide dismutase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 124; Conservative
                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=13146;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=6763;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Melopsittacus.
```

63 64

```
Query Match
Best Local Similarity 53.99
Matches 117; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TISSUE=Lung;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                vector."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              096EE6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            096EE6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART OF A PART
                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                            ò
                                                                                                                              임
                                                                                                                                                                            à
                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       76 KEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAF 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              136 KKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH---IPIIGVDIWEHAFYL 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           72
                                           from the blue crab, Callinectes sapidus.";
Submitted (MAY-2000) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: DESTROYS RADICALS WHICH ARE NORMALLY PRODUCED WITHIN THE CELLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: 2 SUDEROXIDE + 2 H(+) = O(2) + H(2)O(2).
-!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.

Mukhopadhyay S., Das S.K., Mukherjee S.;

"Differential Expression of Mn-SOD Gene in Normal and Cancerous Human Mammary Epithelial Cells.";

Submitted (APR-2003) to the EMBL/GenBank/DDBJ databases.

EMBL; AX280721; AAP34410.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16 VAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVG
                                                                                                                                                                                                                        HSSP; P04179; 1APG.

R GO; GC:0004785; F:copper, zinc superoxide dismutase activity; IEA.

R GO; GC:0004382; F:iron superoxide dismutase activity; IEA.

R GO; GC:0008383; F:manganese superoxide dismutase activity; IEA.

R GO; GC:0008383; F:manganese superoxide dismutase activity; IEA.

R GO; GC:0016872; F:metal ion binding; IEA.

R GO; GC:0016891; F:oxidoreductase activity; IEA.

R GO; GC:0016491; F:oxidoreductase activity; IEA.

R GO; GC:0016491; F:oxidoreductase activity; IEA.

R ThterFro; IRR01189; SODismutase.

R Pfam; PF02777; sodfe C; 1.

R Pfam; PF02777; sodfe C; 1.

R PRINT: FR01773; MSCDISMIASE.

R PRINT: PF0000475; SODISMIASE.

R PRODON; PD000475; SODISMIASE; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
      Brouwer M., Brouwer T.H.; "CDNA sequence of the mitochondrial manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Primates, Catarrhini, Hominidae, Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 5; Length 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23673 MW; A4E05DD5B5098141 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   218 AA; 24125 MW; A7FC7617E8908CF0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-OCT-2003 (TrEMBLrel. 25, Last annotation update) Manganese-containing superoxide dismutase (Fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Last sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             54.2%; Score 625.5; DB 5 56.9%; Pred. No. 1.2e-48; ive 24; Mismatches 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              213 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             193 OYKNVKPDYLAAVWSVINYKEAEARLOAA 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (TrEMBLrel. 25, Created)
(TrEMBLrel. 25, Last sequ
(TrEMBLrel. 25, Last anno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Oxidoreductase; Transit peptide
                                                                                                                                                                                                        AF264029; AAF74770.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    al Similarity 56.99
119; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   213 2
213 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-0CT-2003 (
01-0CT-2003 (
01-0CT-2003 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NON TER
NON TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TRANSIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07Z7M4
                                                                                                                                                                                                          EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
```

```
59 NVTEBKYQBALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGG----PKGELLE 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               124 AIBESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        116 AIKRDEGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 175
                                                                                                                                                                                                                                                                                                                                 64 NAAEESYSAAVGKEDVLIQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                               28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Submitted (MAY-2003) to the EMBL/GenBank/DDBJ databases.

-!- FUNCTION: DESTROYS RADICALS WHICH ARE NORMALLY PRODUCED WITHIN THE CELLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY).

-!- CATALYTIC ACTIVITY: 2 SUPEROXIDE + 2 H(+) = 0(2) + H(2)0(2).

-!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; BC012423; AAH12423.1; -.

R EMBL; AX267901; AAP35613.1; -.

R EMBL; AY267901; AAP35613.1; -.

R GO; GO:0006967; AAP35613.1; -.

R GO; GO:0004785; F:copper, zinc superoxide dismutase activity; IEA.

GO; GO:0008382; F:manganese superoxide dismutase activity; IEA.

GO; GO:0008382; F:marganese superoxide dismutase activity; IEA.

R GO; GO:00164872; F:marganese superoxide dismutase activity; IEA.

R GO; GO:0016491; F:nickel superoxide dismutase activity; IEA.

R GO; GO:0006801; P:superoxide metabolism; IEA.

R GO; GO:0006801; Sodismutase.

R Pfan; PF00081; sodie. 1.

R Pfan; PF00081; sodie. 2.

R Pfan; PF00081; sodie. 2.

R Pfan; PR00177; sodie. 2.

R PRINTS; PR01703; MNSODISWTASE.
                                                                                                                                                                                                                 6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kalnine N., Chen X., Rolfs A., Halleck A., Hines D., Eisenstein S., Koundinya M., Raphael J., Moreira D., Kelley T., LaBaer J., Lin Y., Phelan M., Farmer A.; Phelan M., Farmer A.; "Cloning of human full-length CDSs in BD Creator(TW) System Donor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P.D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-DEC-2003 (TrEMBLrel. 25, Last annotation update)
Hypothetical protein (EC 1.15.1.1) (Superoxide dismutase [Mn/Fe])
(Superoxide dismutase 2, mitochondrial).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Butheria, Primates, Catarrhini, Hominidae, Homo.
NCBI_TaxID=9606,
                                                                                     10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Rieder M.J., Livingston R.J., Daniels M.R., Chung M.-W., Miyamoto K.E., Nguyen C.P., Nguyen D.A., Poel C.L., Robertson Schackwitz W.S., Sherwood J.K., Witrak L.A., Nickerson D.A.; Submitted (APR-2003) to the EMBL/GenBank/DDBJ databases.
53.5%; Score 617; DB 4; Length 213; 53.9%; Pred. No. 7e-48;
                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Strausberg R.;
Submitted (AUG-2001) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEAR
                                                                                     31; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
```

```
Cercopithecinae; Macaca.
NCBI_TaxID=9544;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                             01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                       01-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         08HXP2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q8HXP2
                                                                                                                                                                                     Q8HXP3
                                                                                                                                        RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 11
                                                                                                                                                                Q8HXP3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NX OCCORPTANT
                         à
                                                                 q
                                                                                                                                                                                       SON BREEF REAL BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BREEF BRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7
                                                                                                                                                                                                                                                                                                                                            119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFEKFKEKLTAASVG 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                 64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                   120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                          63
                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                              63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2 KHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNVTEEKYQEALAKGDVTAQIAL
                                                                                                                                                                                                                                  26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                          6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mn-superoxide dismutame.
Macaca fuscata (Japanese macaque).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        primate
                                                                                                                                                                10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Fukuhara R., Terukara T., Kageyama T.;

"Structure, molecular evolution, and gene expression of prir
superoxide dismutases.";

"Structure, molecular evolution, and gene expression of prir
superoxide dismutases.";

EMBL; AB087277; BAC20356.1; -.

GG: GO:0004884; F:superoxide dismutase activity; IEA.

GG: GO:0006801; F:superoxide metabolism; IEA.

R GG: GO:0006801; Sodie.; ..

R PRMTS, PR02777; sodie C.; ..

R PRMTS, PR02777; MSODISMTASE.
                                                                                                                 Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 199;
                                                                                                                                                                62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                            Hypothetical protein, Oxidoreductase.
SEQUENCE 222 AA; 24750 MW; CA047D7900AE5905 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROSITE, PS00088; SOD MN; 1. SPROTIENCE 199 AA; 22340 MW; 43B9CBE138C7E563 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             53.3%; Score 615; DB 6; 56.6%; Pred. No. 9.6e-48; ive 27; Mismatches 53
                                                                                                                 53.4%; Score 616; DB 4; 53.2%; Pred. No. 9.1e-48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ā
                                                                                                                                                             Matches 117; Conservative 31; Mismatches
ProDom; PD000475; SODismutase; 1.
PROSITE; PS00088; SOD MN; 1.
Hypothetical protein; Oxidoreductase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (TrEMBLrel. 23, Created) (TrEMBLrel. 23, Last seq (TrEMBLrel. 25, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=22271545; PubMed=12383507;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ProDom; PD000475; SODismutase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 56.6
Matches 112; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cercopithecinae; Macaca
NCBI_TaxID=9542;
                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MAR-2003 (
01-MAR-2003 (
01-OCT-2003 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QBHXP4
QBHXP4;
                                                                                                                                           Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O8HXP4
       S KW DR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                    ð
```

```
7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          62 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFEKFKEKLTAASVG 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    119 VQGSGWGWLGFNKERGQLQIAACPNQDPLQGTTGLIPLLGIDVWEHAYYLQYKNVRPDYL 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2 KHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNVTBEKYQEALAKGDVTAQIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                   Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bukaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Butheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Fukuhara R., Tezuka T., Kageyama T.; "Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 199;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF02777; sodfe_C; 1.

PRINTS; PR01703; MNSÖDISNTASE.

PRODOM; PD000475; SODISNLTASE; 1.

PROSITE; SO00088; SOD MN; 1.

SEQUENCE 199 AA; 22340 MW; 43B9CBE138C7E563 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            superoxide dismutases.",

Gene 296:99-109(2002).

BMB1, AB087278; BAC2023.1; -.

GO; GO:0004784; F:suetal ion binding; IEA.

GO; GO:0004784; F:superoxide dismutase activity; IEA.

GO; GO:0006801; P:superoxide metabolism; IEA.

InterPro; IPRO1189; Sobismutase.

Pfam; PF02777; sodfe, 1.
                                                                                                                                                                                                                                            (TrEMBLrel. 23, Created)
(TrEMBLrel. 23, Last sequence update)
(TrEMBLrel. 25, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        55.6%; Pred. No. 9.6e-48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                199 AA
                                                                                                                                                                                         199 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
MEDLINE=22271545; PubMed=12383507;
                               203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179 KAIWNVINWENVTERYMA 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Macaca mulatta (Rhesus macaque)
203 AAVWSVINYKEAEARLQA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-MAR-2003 (TrEMBLrel. 23, 01-MAR-2003 (TrEMBLrel. 23, 01-OCT-2003 (TrEMBLrel. 25,
                                                                                                                                                                                                                                                                                                                               Mn-superoxide dismutase.
Macaca fascicularis (Crab
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 112, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mn-superoxide dismutase.
                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Cercopithecinae; Macaca.
NCBI_TaxID=9541;
```

g

à

q

ò

g

à 9

ò

```
61 NGLNAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 112 LINOIKKDFGSIEEMKKRLSENTIAIQGSGWGWLGYCQKSKSLRIATCANQDPLQATTGL 171
                                    124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                            56 NNLNVAEEKMKEAVAKGDVNTQVALSPAIKFNGGGHLNHSIFWCNLSPNGGK----PDAA 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH--- 177
59 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A. WEDLINES-1929762; bubMed=11932240; WEDLINES-1929762; bubMed=11932240; WEDLINES-19297676; bubMed=11932240; Whitfield C.W., Band M.R., Bonaldo M.F., Kumar C.G., Liu L., Pardinas J.R., Robertson H.M., Soares M.B., Robinson G.E.; "Annotetated expressed sequence tags and cDNA microarrays for studies of brain and behavior in the honey bee."; denome Res. 12:555-566(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3 VSYRILFSNTVKDTFT-----RTKHTLPDLPYDYKALEPIISAEIMQLHHSKHHATYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                 Apis mellifera ligustica (Common honeybee).
Bukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Hymenoptera; Apocrita; Aculeata; Apoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       53.3%; Score 614; DB 5; Length 218; 51.6%; Pred. No. 1.3e-47; ive 33; Mismatches 62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          172 IPLFGIDVWEHAYYLQYKNVRPDYVKAIFDVVNWNDVNSRYKKAI 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     218 AA; 24567 MW; 6BB7ABBB599E7C7E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-AUG-1998 (TrEMBLrel. 07, Created) (1-AUG-1998 (TrEMBLrel. 07, Last sequence update) 01-OCT-2003 (TrEMBLrel. 25, Last annotation update) Superoxide dismutase [Mn/Fe] (EC 1.15.1.1).
                                                                                                                                                                                                                                                                                        01-OCT-2003 (TrEMBLrel. 25, Created)
01-OCT-2003 (TrEMBLrel. 25, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
                                                                                                                   181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYK 212
                                                                                                                                       218 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         231 AA
                                                                                                                                                                                                                                                                                                                                                   Mn superoxide dismutase (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AY329356; AAP93582.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 51.69
Matches 116; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Apidae, Apis.
NCBI_TaxID=7469;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NON TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             065324;
                                                                                                                                                                                                                                                      Q7YXM5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         065324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 14
065324
                                                                                                                                                                                                                 RESULT 13
                                                                                                                                                                                                                                                                          SE E E E E E E E
                                                                          염
                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                    à
                                                                                                                   6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFEKFKEKLTAASVG 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64 NAABESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                28
                                                                                                                                                                                                                                                                                                                                                                                                                             26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 KHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNVTEEKYQEALAKGDVTAQIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6 SLSSVSRQTFVAPAAFQI -- RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human
                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo sapiens (Human).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi;
Mammalia, Eutheria, Primates, Catarrhini, Hominidae, Homo.
              MEDLINE=22271545; PubMed=12383507;
Pukuhara R., Tezuka T., Kageyama T.;
Fukuhara R., Tezuka T., Kageyama T.;
Gene 296:99-109(2002).

EMBL; AB087279; BAC20358.1; -.
EMBL; AB087279; BAC20358.1; -.
GO; GO:00046872; F: Retal ion binding; IEA.
GO; GO:0006801; P: Superoxide dismutase activity; IEA.
GO; GO:0006801; P: Superoxide metabolism; IEA.
InterPro; IRRO01189; SoDismutase.
Pfam; PF00081; sodfe_C; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mukhopadhyay S., Das S.K., Mukherjee S.;
"Differential Expression of Mn-SOD Gene in Normal and Cancerous Mammary Epithelial Cells.";
Submitted (APR-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AY280719; AAP34408.1; -
                                                                                                                                                                                                                                                                                                                                                                                           .
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          53.3%; Score 614; DB 4; Length 210;
llarity 54.7%; Pred. No. 1.3e-47;
Conservative 31; Mismatches 55; Indels
                                                                                                                                                                                                                                                                                                                                                     Length 199;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          53.3%; Score 615; DB 6; Length 19
56.6%; Pred. No. 9.6e-48;
ive 27; Mismatches 53; Indels
                                                                                                                                                                                                                                                                                                          22340 MW; 43B9CBE138C7E563 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          210 AA; 23224 MW; 55B509814185894D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-OCT-2003 (TrEMBLrel. 25, Created)
01-OCT-2003 (TrEMBLrel. 25, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
Manganese-containing superoxide dismutase (Fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     210 AA
                                                                                                                                                                                                                                                  PRINTS; PR01703; MNSODISMTASE.
ProDom; PD000475; SODismutase; 1.
PROSITE; PS00088; SOD MN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |:|:|||::
| KAIWNVINWENVTERYMA 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          210
                                                                                                                                                                                                                                                                                                            199 AA;
                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
Les 112; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
nes 116; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NON TER
NON TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q7Z7M6
Q7Z7M6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
```

9 55

δ

qq

```
Search completed: March 30, 2004, 17:10:21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Job time : 48 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
SO DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESERVE DE RESER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               71 IEQLDQAVNKGDASAVVKLQSAIKFNGGGHVNHSIFWKNLAPVKEGGGEPPKGSLGGAID 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        131 TSFGSLEGLVKKMSAEGAAVQGSGWVWLGLDKELKKLVVDTTANQDPLVTKGGSLVPLVG 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                67 EESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIE 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      127 ESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPIIG 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99
                                                                                                                                                                        Kwon S.-I., An C.-S.;
Submitted (APR-1998) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: DESTROYS RADICALS WHICH ARE NORMALLY PRODUCED WITHIN THE
CELLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: 2 SUPEROXIDE + 2 H(+) = O(2) + H(2)O(2).
-!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE
FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                 R HSSP, P04179; 100M.

R GO; GO:0004785; F:copper, zinc superoxide dismutase activity; IEA.

GO; GO:0008382; F:iron superoxide dismutase activity; IEA.

R GO; GO:0008383; F:manganese superoxide dismutase activity; IEA.

GO; GO:0016892; F:matal ion binding; IEA.

GO; GO:0016891; F:mickel superoxide dismutase activity; IEA.

R GO; GO:0016891; F:superoxide metabolism; IEA.

InterPro; IPR001189; SODismutase.

R FF00081; sodfe; 1.

P Ffam; PF00081; sodfe; 1.

P Ffam; PF00081; sodfe; 1.

P Ffam; PF00777; sodfe (C; 1.

R ProDom; PD000475; SODIsmutase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ------TLPDLPYDYSALEPAISGEIMQIHHQKHHQAYVTNYNNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Euphorbia esula (Leafy spurge).
Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, eudicotyledons, core eudicots, rosids,
eurosids I; Malpighiales, Euphorbiaceae, Euphorbioideae, Euphorbieae,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                      Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnollophyta, eudicotyledons, core eudicots, rosids,
eurosids II, Brassicales, Brassicaceae, Raphanus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-OCT-2000 (TrEMBLrel. 15, Created)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
Manganese superoxide dismutase (EC 1.15.1.1) (Superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 231;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DD709E5DBFF81A80 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              53.3%; Score 614; DB 10; 57.5%; Pred. No. 1.5e-47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               191 IDVWEHAYYLOYKNVRPDYLKNVWKVINWKYA 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      237 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
TISSUE=Underground adventitious buds;
Anderson J.V., Horvath D.P.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               231 AA; 25353 MW;
                                                                                                                                                                                                                                                                                                                                                                  EMBL, AF061333; AAC15806.1;
PIR, T08181; T08181.
HSSP; P04179; 1QNM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches 122; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LGSRSIOTF
                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=3993;
                                                                                                NCBI_TaxID=3726;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Euphorbia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEOUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q9M532
Q9M532;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 15
Пр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
```

```
2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  125 IEESFGSFEAFKKKFNADTAAVQGSGWGWLGINPLTKKLEVTTTANQDPLLTH---IPII 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              73
   ð
                                                                                                   THE
                                                                                                                                                                                                                                                       RMBL; AR24310; AAF65768.1; -.
RPIR; T50890; T50830.
RPIR; T50890; T50830.
RSP; P04179; TA6830.
RSP; P04179; TA6830.
RSP; P04179; TA6830.
RSP; P04179; TA6830.
RSP; P04179; TA6830.
RSP; P06108382; F: acoper, zinc superoxide dismutase activity; IEA.
GO; GO:0008382; F: manganese superoxide dismutase activity; IEA.
GO; GO:0006893; F: marcal ion binding; IEA.
RO; GO:0016491; F: nickel superoxide dismutase activity; IEA.
RO; GO:0016891; F: superoxide metabolism; IEA.
RD; GO:0006801; Sodie Cil.
RP Ffan; PF001703; MNSODISMTASE.
RP RINTS; PR01703; MNSODISMTASE.
RP ROSITE; PS000088; SOD_MN; 1.
RP ROSITE; PS000088; SOD_MN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       65 AAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    74 KALEQIHEATEKGDSSTVVKLQSAIKFNGGGHINHSIFWKNLAPVGEGGGELPHGSLGWA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14 LASNSAKLVSGSAVAQLRGFKTFSLPDLPYDYGALEPAISGEIMQLHHQKHHQTYITNYN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    7 LSSVSROTFVAPAAFQIRAKHT--LPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLN
                                  Buphorbia esula (leafy spurge).";
Submitted (MAR-2000) to the EMBL/GenBank/DDBJ databases.
-!- FUNCTION: DESTROYS RADICALS WHICH ARE NORMALLY PRODUCED WITHIN THE
- FILLS AND WHICH ARE TOXIC TO BIOLOGICAL SYSTEMS (BY SIMILARITY).
-!- CATALYTIC ACTIVITY: 2 SUPEROXIDE + 2 H(+) = 0(2) + H(2)0(2).
-!- CATALYTIC ACTIVITY: 5 SUPEROXIDE + 2 H(+) = 0(2) + H(2)0(2).
-!- SIMILARITY: BELONGS TO THE IRON/MANGANESE SUPEROXIDE DISMUTASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
"Identification of mRNAs expressed in underground adventitious buds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 10; Length 237;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                26215 MW; 87EE25907EB702E0 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 53.1%; Score 612.5; DB 10; 56.3%; Pred. No. 2.1e-47; ive 25; Mismatches 63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              194 GIDVWEHAYYLQYKNVRPDYLKNIWKVVNWKYA 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best_Local Similarity 56.3%
Matches 120; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       237 AA;
```

This Page Blank (uspto)

Н

```
oryctolagus
nicotiana p
oryza sativ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  macaca fasc
macaca fusc
macaca mula
hylobates l
pan troglod
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     pongo pygma
arabidopsis
callithrix
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        prunus pers
drosophila
hevea brasi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         homo sapien
equus cabal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ganoderma m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 zea mays (m
penicillium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rattus norv
bos taurus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cavia porce
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              zea mays (m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       zea mays (m
caenorhabdi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   aspergillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     capsicum an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             schizosacch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cebus apell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  caenorhabdi
                                                                                                                                                                         // Search time 18 Seconds
(without alignments)
642.199 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Description
                                                                                                                                                                                                                                                                                             US-09-727-855B-5
1153
1 MSVRASLSSVSRQTFVAPAA......AAVWSVINYKEAEARLQAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              P07895
P41976
P41976
Q9x841
Q8hxy3
Q8hxy3
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8hxy5
Q8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        292429
GenCore version 5.1.6
(c) 1993 - 2004 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  141681 seqs, 52070155 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BOVIN
HUMAN
HORSE
MACFA
MACFU
MACMU
HYLLA
PANTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CALJA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAVPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HEVBR
RABIT
NICPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORYSA
MAIZE
MAIZE
CAEEL
ASPFU
CAPAN
CAEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DROME
                                                                                                                OM protein - protein search, using sw model
                                                                                                                                                                         March 30, 2004, 17:11:03
                                                                                                                                                                                                                                                                                                                                                                                                                    BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SODM I SO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SwissProt_42:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                         Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              %
Query
Match 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  748.5
634.5
629.5
615.5
615.6
615.6
615.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
610.6
                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Database:
                                                                                                                                                                                                                                                                                                                                                               Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Searched:
```

Q99783 neurospora Q9p4t6 agaricus bi Q9pka0 chlamydia m Q84296 chlamydia t Q95347 charybdis f Q929C4 chlamydia p Q811W0 bacillus an P54375 bacillus au P54575 bacillus au P5460 bacillus ca P00449 bacillus ca P00449 hacillus st P28764 listeria mo	DOWG GANNI STANDARD; PRT; 200 AA. C 029423; 01-NOV-1997 (Rel. 35, Created) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) 10-CCT-2003 (Rel. 45, Last sequence update) E Superxide de dismutase [Mi], mitochondrial precursor (EC 1.15.1.1). EDMARTYCE; FEDM NA. STATAL=SEM 0821; NOTALIANATOR PROMING TAINAM UNIVERSITY, Tainam. C STATAL=SEM 0821; NAME H. F., C STATAL=SEM 0821; NAME H. F., C STATAL=SEM 0821; L TOSEACUTOR: Binds I manganese ion per subunit (By similarity).
SODM NEUCR SODM AGABI SODM CHLMU SODM CHLTR SODM CHLTR SODM CHLPN SODM BACAA SODM BACAA SODM BACAE SODM LACAE SODM LACAE	ted) sequence update) mitochondrial precursor ycota; Hymenomycetes; Hor taceae; Ganoderma. iwan University, Taiwan. iwan University, Taiwan. icals which are normally xic to biological system anese ion per subunit (B) Altochondrial matrix. the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super the iron/manganese super are of Baioinformatics an institute. There are the iron/manganese super this is not removed. Usage a greement (See http://w seisb.ch). """ MITOCHONDRICN (POTENT SUPEROXIDE DISWUTASE (BY SIMILARE) MANGANESE
48 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	GANMI STANDARD; PRT; 200 AA. [29] (0V-1997 (Rel. 35, Created) (0V-1997 (Rel. 35, Last sequence update) (0V-1997 (Rel. 35, Last sequence update) (0V-1997 (Rel. 35, Last sequence update) (0V-1997 (Rel. 35, Last sequence update) (0V-1903 (Rel. 35, Last sequence update) (0V-2003 (Rel. 42, Last annotation update) (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Ganoderma. TAXID=34462; (10phorales; Ganodermataceae; Obiological systemity. SUBCELLULAR LOCATION: Mitochondrial matrix. SUBCELLULAR LOCATION MITOCHONDRION (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT MITOCHONDRION) (FOT
34 35 36 37 37 37 37 37 57 57 57 57 57 57 57 57 57 5	
	## ## ## ## ## ## ## ## ## ## ## ## ##

3,

Gaps

6

Length 200; Indels 9

Query Match 64.9%; Score 748.5; DB 1; Best Local Similarity 71.6%; Pred. No. 1.2e-59; Matches 141; Conservative 24; Mismatches 23;

```
OSALKFNGGGHINHSLFWKNLAPAKSEGKGNGGALADGPLKSAIEQNWGSVDNFIKEFNA 118
                                                                                                                                                               201
                                                                                                                                                                                119 TTAAIQGSGWGWLGLNPATKRLEITTTANQDPLLSHVPIIGVDIWEHAFYLQYLNVKADY 178
                                                                               OSALKFNGGGHINHSLFWKNLAPYGSE----BATLSEGPLKKAIEESFGSFBFKKKFNA 141
                                     58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hallewell R.A., Mullenbach G.T., Stempien M.M., Bell G.I.; "Sequence of a cDNA coding for mouse manganese superoxide dismutase."; Nucleic Acids Res. 14:9539-9539(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN-CSTBL/60; TISSUB-Embryo, and Kidney;
MEDLINE=2108560; PubMed=11217851;
Kawai J., Shinagawa A., Shibata K., Yoshino M., Itoh M., Ishii Y.,
Arakawa T., Hara A., Fukunishi Y., Komoo H., Adachi J., Fukuda S.,
Aizawa K., Izawa M., Nishi K., Kiyosawa H., Kondo S., Yamanaka I.,
Saito T., Okazaki Y., Gojobori T., Bono H., Kasukawa T., Saito R.,
Kadota K., Matsuda H.A., Ashburner M., Batalov S., Casavant T.,
Fleischmann W., Gaasterland T., Gissi C., King B., Kochiwa H.,
Kuehl P., Lewis S., Matsuo Y., Nikaido I., Pesole G., Quackenbush J.,
Schriml L.M., Staubli F., Suzuki R., Tomita M., Wagner L., Washio T.,
Schriml L.M., Staubli F., Suzuki R., Tomita M., Wagner L., Washio T.,
Sakai K., Okido T., Furuno M., Anno H., Baldarelli R., Barsh G.,
Blake J., Boffelli D., Bolunga N., Carninci P., de Bonaldo M.F.,
Brownstein M.J., Bult C., Fletcher C., Fujita M., Gariboldi M.,
                       3 HVLPDLPYAYNALEPFISQOIMELHHKKHQTYVNSLNAAEQAYAKASTPKE----RIAL
HTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYS-AAVGKEDVLTQVKL
                                                                                                                                                               DTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTHIPIIGVDIWEHAFYLQYKNVKPDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Rodentia, Sciurognathi, Muridae, Murinae, Mus.
NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=95180711; PubMed=7875582; Jones P.L., Kucera G., Gordon H.M., Boss J.M.; Cloning and characterization of the murine manganous superoxide dismutase-encoding gene."; Gene 53:155-161(1995).
                                                                                                                                                                                                                                                                                                                                                                                                  P09671; Q64670; Q8VEMS; 01-MAR-1989 (Rel. 10, Created) 15-UTL-1989 (Rel. 36, Last sequence update) 10-OCT-2003 (Rel. 42, Last amnotation update) Superoxide dismutase (Mn], mitochondrial precursor (EC 1.15.1.1) SOD2 OR SOD-2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sun Y., Hegamyer G., Colburn N.M.; "Sequence of manganese superoxide dismutase-encoding cDNAs from multiple mouse organs.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=95337589; PubMed=7613035;
Disilvestre D., Kleeberger S.R., Johns J., Levitt R.C.;
"Structure and DNA sequence of the mouse MnSOD gene.";
Mamn. Genome 6:281-284(1995).
                                                                                                                                                                                                                                                                                                                                                                                     222 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TISSUE=Placenta;
MEDLINE=87091590; PubMed=3797253;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
STRAIN=BALB/c, and C3H;
MEDLINE=94010326; Pubmed=8406027;
                                                                                                                                                                                                                                             202 LAAVWSVINYKEAEARL 218
                                                                                                                                                                                                                                                                  |||:| |||:|||| ||
179 LAAIWIVINFKEAERRL 195
                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gene 131:301-302(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mus musculus (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SECUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                   SODM MOUSE
                                                                                                                       59
                                                                                                                                                               142
                                                                               98
                                                                                                                                                                                                                                                                                                                                                                                     쉱
                                                                         \delta
                                                                                                               셤
                                                                                                                                                           ð
                                                                                                                                                                                                                                           ò
                               qq
```

```
RC TISSUE=Mammary gland;

RX SEQUENCE FKOWN N.A.

RECTISSUE=Mammary gland;

REDIINE=22388257; PubMed=12477932;

REDIINE=22388257; PubMed=12477932;

RA Strausberg R.L., Feathgold B.A., Grouse L.H., Derge J.G.,

RA Altschul S.F., Zeeberg B. Buetow K.H., Schaefer C.F., Bhat N.K.,

RA HOpkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haid N.K.,

RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haid F.,

RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haid B.,

RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haid B.,

RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Haid B.,

RA Hopkins R.F., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,

RA Brownstein M.J., Ugdin T.B., Tochiyuki S., Carninci P., Prange C.,

RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,

RA Villalon D.K., Muxny D.M., Sodergren B.J., Lu X., Glibs R.A.,

RA Villalon D.K., Muxny D.W., Sodergren B.J., Lu X., Glibs R.A.,

RA Villalon D.K., Muxny D.W., Green B.D., Dickson M.C.,

Rahey J., Helton B., Ketteman M., Madan A., Rodrigues S., Sanchez A.,

Rahey J., Helton B., Ketteman M., Green B.D., Dickson M.C.,

Rodriguez A.C., Grimwood J., Scheuutz J., Myers R.M.,

Rutterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,

RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.R.,

RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.R.,

RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.R.,

RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.R.,

ROFFALTON Destroys radicals which are normally produced within the cells and which are toxic to biological systems.

C. -- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).

-- SUBUNIT: Homoterramer.

C. -- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).

-- SUBUNIT: Homoterramer.

C. -- SUBCELLULAR LOCATION: Mitochondrial matrix.

C. -- SUBCELLULAR LOCATION: Mitochondrial matrix.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
Gustincich S., Hill D., Hofmann M., Hume D.A., Kamiya M., Lee N.H., Lyons P., Marchionni L., Mashima J., Mazzarelli J., Mombaerts P., Nordone P., Ring B., Ringwald M., Rodriguez I., Sakamoto N., Sasaki H., Sato K., Schoenbach C., Saya T., Shibata Y., Storch K.-F. Suzuki H., Toyo-oka K., Wang K.H., Weitz C., Whittaker C., Wilming L. Wynshaw-Boris A., Yoshida K., Hasegawa Y., Kawaji H., Kohtsuki S.,
                                                                                                                                                                                                                                                       Hayashizaki Y.; "Functional annotation of a full-length mouse cDNA collection."; Nature 409:685-690(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; X04972; CAA28645.1; --
EMBL; 218857; CAA79308.1; --
EMBL; 135528; AA860902.1; --
EMBL; 135526; AA860902.1; JOINED.
EMBL; 135526; AA860902.1; JOINED.
EMBL; 135527; AA860902.1; JOINED.
EMBL; S78846; AAB34899.1; --
EMBL; S78842; AAB34899.1; JOINED.
EMBL; S78844; AAB34899.1; JOINED.
EMBL; S78844; AAB34899.1; JOINED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL, AK002428; BAB22095.1;
EMBL, AK002534; BAB22170.1;
EMBL, AK012354; BAB28183.1;
EMBL; BC010548; AAH10548.1;
                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          family.
            HAND DER REIGERE DER REIGERE GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG GOOGG G
```

EMBL; BC018173; AAH18173.1; -.
PIR; 157023, 157023.
HSSP; P04179; 1ABM.
SWISS-2DPAGE; P09671; MOUSE.
MGD; MGI:98352; Sod2.
MGO; GO:0008383; F:manganese superoxide dismutase activity; IMP.
GO; GO:000881; P:superoxide metabolism; IMP.
InterPro; IPR001189; SODismutase.
PF00081; sodfe; 1.

```
SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=94121934; PubMed=8292376;
                                                                                                                                                                                                                                                                            25 222
50 50
9 98 1183
1187 1
167 24674 MW, L
                                                                                                                                        EMBL; Y00497; CAA68549.1; -. EMBL; X56600; CAA39937.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                   Matches 123; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                                                                                                                                                                                                                                                         167 1
222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bos taurus (Bovine)
                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A. TISSUE=Lung;
                                                                                                                                                                                                                                                                 Transit peptide
TRANSIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SODM BOVIN
P41976;
01-NOV-1995 (
                                                                                                                                                                                                                                                                                                                                           METAL
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                             CHAIN
                                                                                                                                                                                                                                                                                                                   METAL
METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
SODM_BOVIN
           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           쉼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                    m
                                                                                                                                                                                                                                                                                                      61 NGLNAABESYSAAVGKEDVLIQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                   60 NNLNATEEKYHEALAKGDVTTQVALQPALKFNGGGHINHTIFWTNLSPKGGGE---PKGE 116
                                                                                                                                                                                                                                                                                                                                                                 121 LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTH 177
                                                                                                                                                                                                                                                       1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV 60
                                                                                                                                                                                                                                                                    superoxide dismutase.";
Am. J. Respir. Cell Mol. Biol. 4:278-286(1991).
-!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.
-!- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).
-!- CORACTOR: Binds 1 manganese ion per subunit (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=Sprague-Dawley; TISSUE=Liver;
MEDLINE=91159005; PubMed=2001291;
HO Y.-S., Howard A.J., Crapo J.D.;
"Molecular structure of a functional rat gene for manganese-containing
                                                                                                                                                                                                                                  7; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Butheria, Rodentia, Sciurognathi, Muridae, Murinae, Rattus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN=Sprague-Dawley, TISSUE-Liver;
MEDLINE=88096516; PubMed=3697077;
HO Y.-S., Crapo J.D.;
"Nucleotide sequences of cDNAs coding for rat manganese-containing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-Add-1988 (Rel. 08, Created)
01-MAY-1992 (Rel. 22, Last sequence update)
10-OCT-2003 (Rel. 42, Last annotation update)
Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1)
                                                                                    222 SUPERCXIDE DISMUTASE [MN].
50 MANGANESE (BY SIMILARITY).
98 MANGANESE (BY SIMILARITY).
183 MANGANESE (BY SIMILARITY).
187 A -> G (IN REF. 5; AAH18173).
18 G -> V (IN REF. 1).
138 V -> M (IN REF. 1).
138 V -> M (IN REF. 1).
                                                                                                                                                                                                          DB 1; Length
Pfam; PF02777; sodfe C; 1.
PRINTS; PR01703; MNSÖDISMTASE.
ProDom; PD000475; SODISMUtase; 1.
PROSITE; PS00088; SOD MN; 1.
Oxidoreductase; Metal-binding; Manganese; Mitochondrion; Transit peptide.
1 24 MITOCHONDRION.
                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                55.0%; Score 634.5; DB 1;
55.6%; Pred. No. 2e-49;
... Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SUBUNIT: Homotetramer.
SUBCELLULAR LOCATION: Mitochondrial matrix.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nucleic Acids Res. 15:10070-10070(1987)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                     Best Local Similarity 55.5
Matches 124; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Rattus norvegicus (Rat).
                                                                            24
222
50
50
98
1183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         superoxide dismutase.
                                                                                                                                               5
18
138 1
222 AA;
                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=10116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SODM RAT
P07895;
                                                                                                                                               CONFLICT
                                                                                                                                                                      CONFLICT
                                                                                                                                                                                                         Query Match
                                                                                      CHAIN
METAL
METAL
METAL
METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SODM_RAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
      à
                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                   à
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    119 GPLKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWIGLNPLTKKLEVTTTANQDPL---L 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59 YVNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGCHINHSLFWKNLAPYGSEEATLSE 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            115 GELLEAIKRDFGSFEKFKEKLTAVSVGVQGSGWGWLGFNKEQGRLQIAACSNQDPLQGTT 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  58 YVNNLNVTEEKYHEALAKGDVTTQVALQPALKENGGGHINHSIFWTNLSPKGGGE---PK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MLCRAACSAGRR---LGPAASTAGSRHKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 MSVRASLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Eutheria, Cetartiodactyla, Ruminantia, Pecora, Bovoidea,
Bovidae, Bovinae, Bos.
MCBI_TaxID=9913,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-NOV-1995 (Rel. 32, Created)
01-NOV-1995 (Rel. 32, Last sequence update)
10-OCT-2003 (Rel. 42, Last annotation update)
Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Meyrick B., Magnuson M.A., \footnotemark{^{\prime\prime}} "Identification and functional characterization of the bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  55.0%; Score 634.5; DB 1; Length 222; 55.4%; Pred. No. 2e-49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                   PIR; S21661; DSRTN.
HSSP; P04179; 1ABM.
InterPro; IPR001189; SODismutase.
Pfam; PF00081; sodfe_C; 1.
Pfam; PF00777; sodfe_C; 1.
PRINTS; PR01703; MNSODISWTASE.
ProDom; PD000475; SODismutase; 1.
PRODOM; P0000845; SOD SWTASE; 1.
PROSTE; PS00088; SOD MN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUPEROXIDE DISMUTASE [MN].
MANGARESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
Q -> H (IN REF. 1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   176 THIPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEAR 217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GLIPLIGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVSQR 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         222 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MITOCHONDRION
```

```
sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 25-39.
TISSUE=Heart;
                                  NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                     TISSUE=Colon;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Church S.L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1994.";
        ..
m
                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@lsb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60 NNLNVAEEKYREALEKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PQGE 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 NGLINAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTH 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       59
manganous superoxide dismutase promoter.";
Am. J. Respir. Cell Mol. Biol. 10:113-121(1994).
-!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.
-!- CAPALYTIC ACTIVITY: 2 superoxide + 2 H(+) = 0(2) + H(2)0(2).
-!- COPACTOR: Binds 1 manganese ion per subunit (By similarity).
-!- SUBCELLULAR LOCATION: Mitochondrial matrix.
-!- SIMILARITY: Belongs to the iron/manganese superoxide dismutase family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SODM HUMAN STANDARD; PRT; 222 AA. P04179; P78434; Q16792; Q9P223; 20-MAR-1987 (Rel. 04, Created) 01-APR-1980 (Rel. 14, Last sequence update) 10-CCT-2003 (Rel. 42, Last annotation update) Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1). SOD2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 1; Length 222;
                                                                                                                                                                                                                                                                                                                                                                         MITOCHONDRION (BY SIMILARITY).
SUPERCAIDE DISWUTASE [MN].
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
S -> R (IN REF. 1; AAD14001).
F -> V (IN REF. 1; AAD14001).
W., 806CC3FCB1A74413 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRINTS; PR01703; MNSODISMTASE.
ProDom; PD000475; SODISMTEASE; 1.
PROSITE, PS00088; SOD. MN; 1.
Oxidoreductase; Metal-binding; Manganese; Mitochondrion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 54.6%; Score 629.5; DB 1
Best Local Similarity 54.3%; Pred. No. 5.5e-49;
Matches 121; Conservative 32; Mismatches 63
                                                                                                                                                                                                                  EMBL; L22092; AAA30655.1; ALT_INIT.
EMBL; L22093; AAA30656.1; --
EMBL; S67818; AAC60522.2; --
EMBL; S67819; AAD14001.1; --
PIR; IS1918; IS1918.
HSSP; P04179; 1ABM.
                                                                                                                                                                                                                                                                                     InterPro; IPR001189; SODismutase.
Pfam; PF00081; Sodfe; 1.
Pfam; PF02777; Sodfe C; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      90 F
24638 MW;
                                                                                                                                                                                                                                                                                                                                                                           24
222
50
50
98
183
187
                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                            8
90
222 AA;
                                                                                                                                                                                                                                                                                                                                                                  Transit peptide.
                                                                                                                                                                                                                                                                                                                                                                                      25
50
98
183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                             CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                         CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                 METAL
METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SODM HUMAN
                                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                        METAL
           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEARAGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
```

```
Ho Y.-S., Crapo J. D.; "Isolation and characterization of complementary DNAs encoding human manganese-containing superoxide dismutase."; FEBS Lett. 229:256-260(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE OF 25-222.
MEDLINE=85030346; PubMed=6386798;
Barra D., Schinina M.E., Simmaco M., Bannister J.V., Bannister W.H.,
Rotilio G., Bossa F.;
"The primary structure of human liver manganese superoxide dismutase.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Isolation of cDNAs encoding human manganese superoxide dismutase.";
Nucleic Acids Res. 16:6224-6224(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=91105727; PubMed=1988135; St Clair D.K., Holland J.C.; "Complementary DNA encoding human colon cancer manganese superoxide dismutase and the expression of its gene in human cells."; Cancer Res. 51:939-943(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TISSUB=Heart;
MEDLINE=25203287; PubMed=7895732;
Corbett J.M., Wheeler C.H., Baker C.S., Yacoub M.H., Dunn M.J.;
"The human myocardial two-dimensional gel protein database: update
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       amino acid
                                                                                                                                                              MEDLINE-89076921; PubMed-2462451;
Wigge J.R., Clark J.C., Burhans M.S., Kropp K.E., Korfhagen T.R.,
Whitsett J.A.;
Chordata, Craniata, Vertebrata, Buteleostomi,
Primates, Catarrhini, Hominidae, Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         M., Hartman J.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Wan X.S., Devalaraja M.N., St Clair D.K.; "Molecular structure and organization of the human manganese superoxide dismutase gene.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Manganese superoxide dismutase: nucleotide and deduced sequence of a cDNA encoding a new human transcript."; Biochim. Biophys. Acta 1087:250-252(1990).
                                                                                                                                                                                                                                                                  "Synthesis and processing of the precursor for human mangano-superoxide dismutase.":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Beck Y., Oren R., Amit B., Levanon A., Gorecki M
"Human Mn superoxide dismutase cDNA sequence.";
Nucleic Acids Res. 15:9076-9076(1987).
                                                                                                                                                                                                                                                                                                       mangano-superoxide dismutase.";
Biochim. Biophys. Acta 994:30-36(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A., AND VARIANT VAL-16.
MEDLINE=88289364; PubMed=3399391;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Biol. Chem. 259:12595-12601(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Electrophoresis 15:1459-1465(1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cell Biol, 13:1127-1136(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. MEDLINE=95217333; PubMed=7702755;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. MEDLINE=91027939; PubMed=1699607;
                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=88067716; PubMed=3684581;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
TISSUE-Liver;
MEDLINE-88152250; PubMed=2831093;
          Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE OF 25-39.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
```

Ŋ

```
Transit peptide, 3D-structure, TRANSIT 1 24 MT
                                                                                                                                                                                                                                                                                                                EMBL; X07834; CAA30687.1; -. EMBL; M36693; AAA36622.1; -. EMBL; X15132; CAA33228.1; -.
                                                                                                                                                                                                                                             EMBL; X59445; CAA42066.1; -.
                                                                                                                                                                                                                                                              Y00472; CAA68533.1; -. Y00985; CAA68791.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SWISS-2DPAGE; P04179; HUMAN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HSC-2DPAGE; P04179; HUMAN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PMMA-2DPAGE; P04179; -. Siena-2DPAGE; P04179; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Genew; HGNC:11180; SOD2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pfam; PF00081; sodfe; 1
Pfam; PF02777; sodfe_C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1MSD; 15-JUL-93.
1N0J; 06-NOV-02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1AP5; 28-JAN-98,
1AP6; 28-JAN-98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15M1; 01-SEP-00.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1VAR; 10-JUN-96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1LUV; 19-JUN-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1LUW; 19-JUN-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       06-NOV-02
                                                                                                                                                                                                                                                                                                                                                                                                                  S17127; AAD14
S13162; DSHUN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      147460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SODM HORSE
Q9XS41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TONM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1NON;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                       EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SODM_HORSE
                                                                                                                                                                                                                                                                                                                                                                                                                                      PIR;
PDB;
PDB;
PDB;
PDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PDB;
PDB;
PDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PDB;
PDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 6
    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Biochemistry 40:12051-12058(2001).
-!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.
-!- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = 0(2) + H(2)0(2).
-!- COFACTOR: Binds 1 manganese ion per subunit.
-!- SUBUNIT: Homotetramer.
-!- SUBURITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=20111275; PubMed=10852710; Leveque V.J.-P., Stroupe M.E., Lepock J.R., Cabelli D.E., Tainer J.A., Nick H.S., Silverman D.N.; "Multiple replacements of glutamine 143 in human manganese superoxide dismutase: Effects on structure, stability, and catalysis."; Blochemistry 39:7131-7137(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hsieh Y., Guan Y., Tu C., Bratt P.J., Angerhofer A., Lepock J.R., Hickey M.J., Tainer J.A., Nick H.S., Silverman D.N.; "Probing the active site of human manganese superoxide dismutase: the role of glutamine 143.";
                                                                                                                                                                                                                                                                                                                                                                                                        X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
MEDLINE=3008233; PubMed=1394426;
MEDLINE=3008233; PubMed=1394426;
Ballewell G.E.O., Parrge H.E., Hickey M.J., Beyer W.F. Jr.,
Hallewell R.A., Tainer J.A.;
"The structure of human mitochondrial manganese superoxide dismutase
reveals a novel tetrameric interface of two 4-helix bundles.";
Cell 71:107-118 (1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'Kinetic analysis of product inhibition in human manganese superoxide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=98206887; PubMed=9537987; Guan Y., Hickey M.J., Borgetahl G.E.O., Hallewell R.A., Lepock J.R., O'Connor D., Hsieh Y., Nick H.S., Silverman D.N., Tainer J.A.; Crystal structure of Y34F mutant human mitochondrial manganese superoxide dismutase and the functional role of tyrosine 34.";
                                                                                                                                                                                      TISSUE=Breast carcinoma;
MEDLINE=97295304; PubMed=9150946;
Rasmussen R.K., Ji H., Eddes J.S., Moritz R.L., Reid G.E.,
Simpson R.J., Dorow D.S.;
"Two-dimensional electrophoretic analysis of human breast carcinoma proteins; mapping of proteins that bind to the SH3 domain of mixed
                   Kovalyov L.I., Shishkin S.S., Efimochkin A.S., Kovalyova M.A., Eshova E.S., Egorov T.A., Musalyamov A.K.; "The major protein expression profile and two-dimensional protein database of human heart:";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  variant Ile58Thr reduces activity by destabilizing the tetrameric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              X-RAY CRYSTALLOGRAPHY (2.12 ANGSTROMS) OF MUTANT ALA-185.
MEDLINE=21464436; PubMed=11580280;
Hearn A.S., Stroupe M.E., Cabelli D.E., Lepock J.R., Tainer J.A., Nick H.S., Silverman D.N.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Human mitochondrial manganese superoxide dismutase polymorphic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  X-RAY CRYSTALLOGRAPHY (2.13 ANGSTROMS) OF MUTANT ALA-167.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=96183289; PubMed=8605177;
Borgstahl G.E.O., Parge H.E., Hickey M.J., Johnson M.J.,
Boissinot M., Hallewell R.A., Lepock J.R., Cabelli D.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            X-RAY CRYSTALLOGRAPHY (2.3 ANGSTROMS) OF VARIANT ASN-167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS) OF VARIANT THR-82.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS) OF VARIANT TYR-58
                                                                                                                  Electrophoresis 16:1160-1169(1995)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=98206888; PubMed=9537988;
MEDLINE=96007936; Pubmed=7498159
                                                                                                                                                                                                                                                                                                                                                             Electrophoresis 18:588-598(1997)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Biochemistry 35:4287-4297(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Biochemistry 37:4731-4739(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     iochemistry 37:4722-4730(1998).
                                                                                                                                                                                                                                                                                                                                       ineage kinase MLK2
                                                                                                                                                               SEQUENCE OF 25-39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Tainer J.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      dismutase.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             interface."
CCCCCCCCLLTRAY REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REPERFRENCE REP
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb.sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120 AIKRDFGSFDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 SLSSVSROTFVAPAAFQI -- RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             min, 14,480, ...
GO; GO:0006383; F:manganese superoxide dismutase activity; NAS
GO; GO:0006979; P:response to oxidative stress; NAS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               53.8%; Score 620; DB 1; Length 222; 53.6%; Pred. No. 3.9e-48; Live 31; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRINTS; PR01703; MNSOTISMTASE.
Probom; PD000475; SODismutase; 1.
PROSITE; PS00088; SOD MN; 1.
Oxidoreductase; Metal-binding; Manganese; Mitochondrion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180 LGIDVWEHAYYLQYXXVVRPDYLKAIWNVINWENVTERYMA 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Polymorphism. MITOCHONDRION.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ą.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; X14322; CAA32502.1; -. EMBL; S77127; AAD14248.1; ALT_SEQ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR001189; SODismutase.
```

```
SODM MACFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                    08HXP3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      METAL
                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its most by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60 NNLNVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHTIFWTNLSPNGGGE---PKGK 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTH 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             59
                                                                                                                                                                                                                                                                          MEDLINE=99261591; PubMed=10331206; Ishida N., Katayama Y., Sato F., Hasegawa T., Mukoyama H.; Ishida N., Katayama Y., Sato F., Hasegawa T., Mukoyama H.; Ishida N., Katayama Y., Sato F., Hasegawa T., Mukoyama H.; Ishida N., Katayama Y., Sato F., Hasegawa T., Mukoyama H.; J., Vet., Med. Sci. 61:291-294(1999).

-! FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.

-! CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).

-! COPACTOR: Binds 1 manganese ion per subunit (By similarity).

-! SUBUNIT: Homotetramer (By similarity).

-! SUBCELLULAR LOCATION: Mitochondrial matrix.

-! SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                   Būkaryota; Metazoa; Chordata; Craniata; Vertebrata; Buteleostomi;
Mammalia; Butheria; Perissodactyla; Equidae; Equus.
                    Last sequence update)
Last annotation update)
[Mn], mitochondrial precursor (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1; Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MITOCHONDRION (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Oxidoreductase; Metal-binding; Manganese; Mitochondrion;
Transit peptide. 1 24 MITOCHONDRION (BY SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUPEROXIDE DISMUTASE [MM].
MANGANESE (BY SIMILARITY)
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      93A069481944E98C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  53.4%; Score 615.5; DB 1
52.9%; Pred. No. 9.8e-48;
iive 32; Mismatches 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR011189; SODismutase.
Pfam; PR00081; sodfe; 1.
Pfam; PF02777; sodfe C; 1.
PRINTS; PR01703; MNSODISMTASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ProDom; PD000475; SODismutase; 1. PROSITE; PS00088; SOD_MN; 1.
  Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AB001693; BAA76922.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24739 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24
222
50
50
98
183
(Rel. 40, (Rel. 40, (Rel. 42,
                                                                                                                               Equus caballus (Horse)
                                                                   Supercoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        222 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HSSP; P04179; 1ABM
                                                                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                              NCBI_TaxID=9796;
                                                                                                                                                                                                                                                              rissum=Testis;
                      16-0CT-2001
10-0CT-2003
    16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           118;
                                                                                       (Mn-SOD).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
    PHHERE SOURCE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STATE STAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   qq
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the BMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 QPALKFNGGCHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFEKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.
-!- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = 0(2) + H(2)0(2).
-!- COFACTOR: Binds 1 manganese ion per subunit (By similarity).
-!- SUBUNIT: Homoterramer (By similarity).
-!- SUBCELLULAR LOCATION: Mitochondrial matrix (By similarity).
-!- SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                           Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
Cercopithecinae; Macaca.
                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
MEDLINE-22271545; PubMed=12383507;
FURUNDATA R., Tezuka T., Kageyama T.;
"Structure, molecular evolution, and gene expression of primate superoxide dismutases.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53.3%; Score 615; DB 1; Length 198; 56.6%; Pred. No. 9.4e-48; ive 27; Mismatches 53; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ProDom; PD000475; SODISmutase; 1.
PROSITE; PS00088; SOD MN; 1.
Oxidoreductase; Metal-binding; Manganese; Mitochondrion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
                                                                  15-MAR-2004 (Rel. 43, Created)
15-MAR-2004 (Rel. 43, Last sequence update)
15-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (EC 1.15.1.1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FB4F6B063198E5CC
198 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL, AB087278, BAC20357.1, ALT INIT.
InterPro; IPR001189; SODismutase.
pfam; PF00081; Sodfe.; 1.
Pfam; PF02777; Sodfe.C; 1.
PRINTS; PR01773; MNSODISMTASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KAIWNVINWENVTERYMA 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        22209 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 112; Conservative
   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gene 296:99-109(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      159 1
163 1
198 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=9541;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 family.
```

us-09-727-855b-5.rsp

```
SODM_MACMU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                         OBHXP2;
               SODM MACMU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
RESULT 9
                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@lsb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFEKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 146 VOGSGWGWLGLNPLIKKLEVTTTANODPL---LTHIPIIGVDIWEHAFYLOYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                         -!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.
-!- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).
-!- COFACTOR: Binds 1 manganese ion per subunit (By similarity).
-!- SUBUNIT: Homotetramer (By similarity).
-!- SUBCELLULAR LOCATION: Mitochondrial matrix (By similarity).
-!- SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                Macaca fuscata fuscata (Japanese macaque).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Primates, Catarrhini, Cercopithecidae,
                                                                                                                                                                                                         MEDLINE=22271545; PubMed=12383507;
Fukuhara R., Tezuka T., Kageyama T.;
"Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL, AB087277; BAC20356.1; ALT INIT.

InterPro; IPR001189; SODismutase.

Pfam, PR001081; sodfe 1.

Pram, PR02777; sodfe C; 1.

PRINTS; PR01703; MNSÖDISMTASE.

PRODOM; PB000475; SODismutase; 1.

PROSITE; PS00088; SOD MN; 1.

Oxidoreductase; Metal-binding; Manganese; Mitochondrion.

METAL 26

MANGANESE BY SIMILARITY).

METAL 159 MANGANESE BY SIMILARITY).

METAL 159 MANGANESE BY SIMILARITY).

METAL 163 163 MANGANESE BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53; Indels
                                   OBHXP4;
15-MAR-2004 (Rel. 43, Created)
15-MAR-2004 (Rel. 43, Last sequence update)
15-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22209 MW; FB4F6B063198E5CC CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53.3%; Score 615; DB 1; 56.6%; Pred. No. 9.4e-48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              178 KAIWNVINWENVTERYMA 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                  superoxide dismutases.";
Gene 296:99-109(2002).
                                                                                                                                                        Cercopithecinae; Macaca.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  159 1
163 1
198 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                     NCBI TaxID=9543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches 112;
                        SODM MACFU
                                                                                                                                                                                                                                                                                                                                                                      family
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                      임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the Buropean Bioinformatics Institute. There are no restrictions on its muse by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFEKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             146 VQGSGWGWLGLNPLTXKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gene 296:99-109(2002).
-!-FUNCTION: Destroys radicals which are normally produced within to calls and which are toxic to biological systems.
-!-CATALTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).
-!-COFACTOR: Binds 1 manganese ion per subunit (By similarity).
-!-SUBUNIT: Homocetzamer (By similarity).
-!-SUBCELDULAR LOCATION: Mitochondrial matrix (By similarity).
-!-SUBCELDULAR LOCATION: Mitochondrial matrix (By similarity).
-!-SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                   Macaca mulatta (Rhesus macaque).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=22271545; PubMed=12383507; Pukuhara R., Peruka T., Kageyama T.; Rajeructure, molecular evolution, and gene expression of primate superoxide dismutases.",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     53; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL, AB089279; BAC20358.1; ALT INIT.
InterPro; IPR001189; SODismutase.
Pfam; PF00015; SODfs: 1.
PRINTS: PR01703; MNSODISMTASE.
ProDom: PD000475; SODISMITASE.
PROSTITS: PS00088; SOD MN: 1.
Oxidoreductase; Metal-binding; Manganese; Mitochondrion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (BY SIMILARITY).
                                                                                     15-MAR-2004 (Rel. 43, Last sequence update)
15-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       163 163 MANUBANDAD 122 CRC64;
198 AA; 22209 MW; FB4F6B063198E5CC CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   53.3%; Score 615; DB 1; 56.6%; Pred. No. 9.4e-48;
198 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MANGANESE
MANGANESE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     178 KAIWNVINWENVTERYMA 195
                                                           15-MAR-2004 (Rel. 43, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
STANDARD;
                                                                                                                                                                                                                                                                                                                      Cercopithecinae; Macaca.
                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=9544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
```

```
56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                          SODM_PANTR
RESULT 11
                                                 SOLUTION NEW PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE PROPERTIES OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the BMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its was by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QSALKFNGGGHINHSLFWKNLAPYGSEBATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFDKFKEKLTATSVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                superoxide dismutasses.",

Gene 296:99-109(2002).

-!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.

-!- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = 0(2) + H(2)0(2).

-!- COPACTOR: Binds 1 manganese ion per subunit (By similarity).

-!- SUBUNIT: Homotetramer (By similarity) witochondarial matrix (By similarity).

-!- SUBURITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 KHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNVTEEKYQEALAKGDVTAQIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                Hylobates lar (Common gibbon).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata; Euteleostomi.
Mammalia, Eutheria, Primates, Catarrhini, Hylobatidae, Hylobates
                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-22271545; PubMed-12383507;
Fukuhara R., Tezuka T., Kageyama T.;
"Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Oxidoreductase; Metal-binding; Manganese; Mitochondrion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
                                                                                                                                      15-MAR-2004 (Rel. 43, Last sequence update)
15-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (RC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22234 MW; E266AFBBBDB34566 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            53.0%; Score 611; DB 1; 56.1%; Pred. No. 2.1e-47;
                                                                         198 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL, AB087276; BAC20355.1; ALT INIT.
InterPro; IPR001189; SODismutase.
Pfam; PF00081; sodfe; 1.
Pfam; PF02777; sodfe; 1.
PRINTS; PR01703; MNSODISMTASE.
PRODCM; PD000475; SODISMUTASE; PROSTITE; PS00088; SOD_MN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              203 AAVWSVINYKEAEARLQA 220
                                                                                                                   (Rel. 43, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   159
163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             163 1
198 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
nes 111; Conserv
                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                           NCBI_TaxID=9580;
                                                                                                                   15-MAR-2004
                                                                    SODM HYLLA
Q8HXP5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                    SODM HYLLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@ib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFDKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     09
                                                                                                                                                                                                                                                                                                                                                                                                    1 KHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNVTEEKYQEALAKGDVTAQIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                           Pan troglodytes (Chimpanzee).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Primates, Catarrhini, Hominidae, Pan.
                                                                                                                                                                                                                                                                                                                            MEDLINE-22271545; PubMed-12383507;
Fukuhara R., Tezuka T., Kageyama T.;
"Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AB087274; BAC20353.1; ALT INIT.
InterPro; IPR001189; SODismutase.
Pfam; PF00081; Sodfe; 1.
Pfam; PF00277; Sodfe; 1.
PRINTS; PR01703; MNSODISMTASE.
ProDom; PD000475; SODISmutase; 1.
PROSITE; P800089; SOD_MN; 1.
Oxidoreductase; Metal-bindis; Manganese; Mitochondrion.
METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
MANGANESE (BY SIMILARITY).
                                                                    15-MAR-2004 (Rel. 43, Last sequence update)
15-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    198 AA; 22204 MW; F772EABBA6A9F4CD CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              52.9%; Score 610; DB 1;
56.1%; Pred. No. 2.6e-47;
iive 27; Mismatches 54;
198 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |:|:|||::
| KAIWNVINWENVTERYMA 195
                                                  15-MAR-2004 (Rel. 43, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               159
163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                        NCBI_TaxID=9598;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        111;
SODM PANTR
Q8HXP7;
```

RESULT 12

231 AA.

PRT;

STANDARD;

```
thaliana.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the BMBL outstation - the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFDKFKEKLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     86 OSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                       Gene 296:99-109(2002).
-!- FUNCTION: Destroys radicals which are normally produced within the cells and which are toxic to biological systems.
-!- CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).
-!- CORCTOR: Binds I manganese ion per subunit (By similarity).
-!- SUBUNIT: Homotetramer (By similarity).
-!- SUBCELLUIAR LOCATION: Mitochondrial matrix (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 KHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYVNNLNVTEEKYQEALAKGDVTAQIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                          Pongo pygmaeus (Orangutan).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Primates, Catarrhini, Hominidae, Pongo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                        MEDLINE=22271545; PubMed=12383507;
Fukuhara R., Tezuka T., Kageyama T.;
"Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 198;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    54; Indels
                                        15-MAR-2004 (Rel. 43, Created)
115-MAR-2004 (Rel. 43, Last sequence update)
115-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase (Mnl, mitochondrial (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    52.9%; Score 610; DB 1; 56.1%; Pred. No. 2.6e-47; tive 27; Mismatches 54;
             198 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       203 AAVWSVINYKEAEARLOA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     178 KAIWNVINWENVTERYMA 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 56.1%;
Matches 111; Conservative
                                                                                                                                                                                                                                                                           superoxide dismutases.";
             STANDARD;
                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                          NCBI_TaxID=9600;
                                                                                                                                                                                                                                                                                                                                                                                                                            family
           SODM PONPY
                              OBHXP6;
SODM
               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
```

SODM_ARATH RESULT 13

```
RA Salanoubat M., Lemcke K., Rieger M., Ansorge W., Unseld M.,
RA Salanoubat M., Lemcke K., Rieger M., Perez-Alonso M., Obermaier B.,
Rableseny M., Boutry M., Grivell L.A., Mache R., Pudgomench P.,
RA Delseny W., Boutry M., Grivell L.A., Mache R., Pudgomench P.,
RA Wincker P., Cattolico L., Weissenbach J., Saurin W., Ouetier F.,
RA Wincker P., Cattolico L., Weissenbach J., Saurin W., Ouetier F.,
RA Wincker P., D'Angelo M., Pallavichin A., Toppo S., Simionati B.,
Witchell D., Scharfe M., Schoen O., Bargues M., Terol J., Climent J.,
Reichelt J., Scharfe M., Schoen O., Bargues M., Terol J., Climent J.,
Reichelt J., Scharfe M., Schoen O., Bargues M., Terol J., Climent J.,
Reichelt J., Scharfe M., Schoen O., Bargues M., Terol J., Climent J.,
Reichelt J., Scharfe M., Berez-Perez A., Ottenwealder B., Duchemin D.,
Reichelt J., Scharfe M., Berez-Perez A., Ottenwealder B., Duchemin D.,
Reichelt J., Scharfe M., Berez-Lauro C., Purnelle B., Masuy D.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Collado C., Perez-Perez A., Ottenwealder B.,
Anvarro P., Milischer J., Schoof H., Rado S., Saccaria P., Marenso D.,
Rooney T., Rizzo M., Wale D., Koo H.L., Tallon L.J., Jenkam A.,
Rasamoto S., Kimura T., Nierman W.C., Salzberg S.L., White O., Venter J.C.,
R. Peress D., Lin X., Nierman W.C., Salzberg S.L., White O., Venter J.C.,
R. Sasamoto S., Kimura T., Nierman M., Ranoko T., Masamizu E.,
R. Asaamoto S., Nakazaki N., Shinpo S., Takeuchi C., Wada T.,
R. Tageluence and analysis of chromosome 3 of the plant Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAINECY. Columbia;

X MEDLINE=22954850; PubMed=14593172;

A Southwick A.M., Wu H.C., Kim C.J., Nguyen M., Pham P.K., Cheuk R.F.,

A Karlin-Newmann G., Liu S.X., Lam B., Sakano H., Wu T., Yu G.,

A Miranda M., Quach H.L., Tripp M., Chang C.H., Lee J.M., Torluni M.J.,

A Chan M.M., Tang C.C., Choquera C.S., Deng J.M., Akiyama K., Ansari Y.,

A Arakawa T., Banh J., Banno F., Bowser L., Brooks S.Y., Carninci P.,

Chao Q., Choy M., Enju A., Goldsnith A.D., Gurjal M., Hansen N.F.,

A Hayashizaki Y., Johnson-Hopson C., Hsuan V.W., Iida K., Karnes M.,

Khan S., Koesema E., Ishida J., Jiang P.X., Jones T., Kawai J.,

A Kamiya A., Meyers C., Nakajima M., Narusaka M., Saki M., Sakurai T.,

Satou M., Tamse R., Vayaberg M., Wallender E.K., Wong C., Yamamura Y.,

Yuan S., Shinozaki K., Davis R.W., Theologis A., Ecker J.R.;

"Empirical analysis of transcriptional activity in the Arabidopsis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -i- FUNCTION: Destroys radicals which are normally produced within the
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kliebenstein D.J., Monde R.A., Last R.L.; "Superoxide dismutase in Arabidopsis: an eclectic enzyme family with disparate regulation and protein localization."; disparate F.S. (18:637-650(1998).
     091235, Q9SRR3; Created)
16-OCT-2001 (Rel. 40, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-MAR-2004 (Rel. 43, Last annotation update)
15-MAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1).
Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1).
Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1).
Superoxide dismutase [Mn], mitochondrial precursor (EC 1.15.1.1).
Superoxide dismutase [Mn], mitochondrial precursor, viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnollophyta; eudicotyledons; core eudicots; rosids; eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
STRAIN=cv. Columbia;
MEDLINE=21016720; PubMed=11130713;
                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN-cv. Columbia;
MEDLINE-98440686; PubMed-9765550;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nature 408:820-822(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Science 302:842-846(2003)
                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genome.";
```

```
NCBI_TaxID=9483;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=9515;
                                                                                                                                                                                                                                                                                                           family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SODM CEBAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QBHXP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SODM CEBAP
                                                                                                                                              Gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 15
      NAME OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SC CON CONTRACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      88 ALKFNGGGHINHSLFWKNLAPYGSERATLSEGPLKKAIEESFGSFEAFKKKFNADTAAVQ 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPIIGVDIWEHAFYLQYKNVKPDYLA 203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28 TLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKLQS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              32 TLPDLPYDYGALEPAISGEIMQIHHQKHHQAYVTNYNNALEQLDQAVNKGDASTVVKLQS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                  SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
ammalia, Eutheria, Primates, Platyrrhini, Callitrichidae,
Callithrix.
cells and which are toxic to biological systems. CATALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2). COPACTOR: Binds 1 manganese ion per subunit (By similarity). SUBUNIT: Homotetramer (By similarity). SUBCELLULAR LOCATION: Mitochondrial matrix.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; Score 606; DB 1; Length 231;
; Pred. No. 7.2e-47;
21; Mismatches 51; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MITOCHONDRION (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Oxidoreductase; Metal-binding; Manganese; Mitochondrion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SUPERCYIDE DISMUTASE (MN)
MANGANESE (BY SIMILARITY)
MANGANESE (BY SIMILARITY)
MANGANESE (BY SIMILARITY)
MANGANESE (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15-WAR-2004 (Rel. 43, Created)
15-WAR-2004 (Rel. 43, Last sequence update)
15-WAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (EC 1.15.1.1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2DBD5560A9E8AD7D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -> F (IN REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              198 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MANGANESE
V -> F (IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Callithrix jacchus (Common marmoset)
                                                                                                                                                                                                                                                                                                                EMBL; AF061518; AAC24832.1;
EMBL; AC009991; AAF01529.1;
EMBL; AY072495; AAL66910.1;
EMBL; AY072495; AAL24289.1;
PIR; T50827; T50827.
HSSP; P04479; 1ASM.
InterPro; IPR001189; SODismutase.
Pfan; PF0081; Sodfe; 1.
Pfan; PF02777; Sodfe C; 1.
PFNNTS; PR01703; MNSODISMTASE.
PRODOM; PD000475; SODISMUTASE.
PRODOM; PD000475; SODISMUTASE.
PRODOM; PD000475; SODISMUTASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     25444 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               52.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              al Similarity 60.2
115; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   204 AVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       212 NVWKVINWKYA 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             231
231
59
103
196
169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30
59
103
192
196
169
231 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Transit peptide.
FRANSIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SODM_CALJA
                                                                                                                       family
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             METAL
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QBHXPO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       METAL
METAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CALJA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT
SODM CA
  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86 QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 QPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRDFGSFDKFKERLTAASVG 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                            -I-FUNCTION: Destroys radicals which are normally produced within the calls and which are toxic to biological systems.
-I-CATALYMIC ACTIVITY: 2 superoxide + 2 H+) = 0(2) + H(2)0(2).
-I-CATALYMIC ACTIVITY: 2 superoxide + 2 H+) = 0(2) + H(2)0(2).
-I-COPACTOR: Binds 1 manganese ion per subunit (By similarity).
-I-SUBCELULIAR INCATION: Mitcohondrial matrix (By similarity).
-I-SUBCELULIAR INCATION: Mitcohondrial matrix (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cebus apella (Brown-capped capuchin).
Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia; Eutheria; Primates; Platyrrhini; Cebidae, Cebinae; Cebus.
SEQUENCE FROM N.A.
MEDILINE=22271545; PubMed=12383507;
Fukuhara F., Tezuka T., Kageyama T.;
"Structure, molecular evolution, and gene expression of primate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             52.5%; Score 605; DB 1; Length 198; 55.6%; Pred. No. 7.3e-47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-WAR-2004 (Rel. 43, Created)
15-WAR-2004 (Rel. 43, Last sequence update)
15-WAR-2004 (Rel. 43, Last annotation update)
Superoxide dismutase [Mn], mitochondrial (EC 1.15.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  E7F8860B8C56F2CA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             198 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        203 AAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            178 KAIWNVINWENVTERYMA 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  198 AA;, 22248 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 110; Conservative
                                                                                                                           superoxide dismutases.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                   296:99-109(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
```

```
This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation-the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                              MEDLINE=2221545; PubMed=12283507; Pukuhara R., Tezuka T., Kageyama T.; Pukuhara R., Tezuka T., Kageyama T.; Pukuhara R., Tezuka T., Kageyama T.; Pukuhara R., Tezuka T., Kageyama T.; Pukuhara R., Tezuka T., Kageyama T.; Pukutara R., Tezuka T., Kageyama T.; Pukutara R., 1010cular evolution, and gene expression of primate superoxide dismutases."; Gene 296:99-109(202).

-!- CMTALYTIC ACTIVITY: 2 superoxide + 2 H(+) = O(2) + H(2)O(2).
-!- COPACTOR: Binds I manganese ion per subunit (By similarity).
-!- SUBUNIT: Homotetramer (By similarity).
-!- SUBCELLULAR LOCATION: Mitochondrial matrix (By similarity).
                                                                                                                                                                                                                                                                         -!- SIMILARITY: Belongs to the iron/manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              52.5%; Score 605; DB 1; Length 198; 55.6%; Pred. No. 7.3e-47; tive 28; Mismatches 54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Oxidoreductase; Metal-binding; Manganese; Mitochondrion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26 MANGANESE (BY SIMILARITY).
74 MANGANESE (BY SIMILARITY).
159 MANGANESE (BY SIMILARITY).
163 MANGANESE (BY SIMILARITY).
22248 MW; E7F8860B8C56F2CA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL; AB087280; BAC20359.1; ALT INIT.
InterPro; IPR001189; SODismutase.
Pfam; PF00081; sodfe; 1.
Pfam; PF02777; sodfe; 1.
PRINTS; PR01703; MNSÖDISMTASE.
PRODOM; PD000475; SODISMITESE; 1.
PROSTIE; PS00088; SOD.MN; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                163 1
198 AA;
[1]
SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                METAL
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
```

118 VQGSGWGWLGFNKERGHLQIAACPNQDPLQGTTGLIPLLGIDVWEHAYYLQYKNVRPDYL 177 203 AAVWSVINYKEAEARLQA 220 178 KAIWNVINWENVTERYMA 195 g ð

7

6; Gaps

Best Local Similarity 55.69 Matches 110; Conservative

QSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAA 145 61 QPALKFNGGGHINHSIFWINLSPNGGGE---PKGELLEAIKRDFGSFDKFKERLTAASVG 117

98

g à d δ

26 KHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKL 85

146 VQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDIWEHAFYLQYKNVKPDYL 202

Search completed: March 30, 2004, 17:14:38 Job time : 19 secs

This Page Blank (uspto)

```
GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
```

OM protein - protein search, using sw model

Run on:

March 30, 2004, 17:09:18; Search time 26 Seconds (without alignments) 821.328 Million cell updates/sec

US-09-727-855B-5 1153 1 MSVRASLSSVSRQTFVAPAA......AAVWSVINYKEAEARLQAAL 222 Title: Perfect score:

BLOSUM62 Gapop 10.0 , Gapext 0.5 Scoring table:

Sequence:

283366 segs, 96191526 residues Searched:

283366 Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0 Maximum DB seq length: 20000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

PIR 78:*
1: pirl:*
2: pir2:*
3: pir3:*
4: pir4:* Database :

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

ES		superoxide dismuta	superoxide dismuta																					superoxide dismuta						superoxide dismuta
SUMMARIES	ID	DSRTN	157023	151918	DSHON	T08181	T50830	T50827	S65795	T50828	DSPMN	T06258	S39492	803639	T04072	T04075	T04312	B48684	T06801	JC5122	803839	T08045	T50829	T50831	T47752	S52721	C48684	T50070	36	T09799
	DB	-	~	7	-	7	~	7	7	ď	Н	7	ď	N	N	~	7	N	ď	N	7	N	7	7	7	7	7	7	~	7
	Length	222	222	222	222	231	237	231	204	228	240	231	233	228	231	231	231	233	231	221	235	228	205	240	241	218	232	218	233	198
de	ery tch	55.0	55.0	54.6	53.8			52.1	52.0		52.0	51.7			51.2		51.2	51.2	50.9	50.7	50.7	50.5	50.4	49.8	•		49.5		48.4	48.0
	Ō		634.5	629.5	620	Н	612.5	601	009	009	009	596	595	592	590.5	590.5	590.5	590	LO.	584.5	584	582	581	574	574	572	570.5	260	S	553
	ίΩ .		7	m	4	2	φ	7	80	σ	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

superoxide dismuta	probable superoxid	superoxide dismuta	superoxide dismuta	superoxide dismuta	superoxide dismuta	superoxide dismuta	superoxide dismuta	superoxide dismuta	superoxide dismuta			superoxide dismuta	superoxide dismuta	superoxide dismuta	amperoxide dismita
T50832	T09788	A81688	H71531	B86498	B72124	B69709	S22053	DSBSNF	JC1272	AG1254	A39223	S48831	S48832	820019	AE1617
N	~	N	7	N	7	7	0	Н	Ŋ	7	7	7	7	~	c
_	'n	7	90	207	07	56	40	4	2	c۱	9	33	e	22	S
18	23	~	ñ	N	ā	7	Ñ	2	ŏ	50	1	22	22	~	c
	47.1 23														
	47.1		45.9	44.6	44.6	43.8		42.9	42.7	42.7	42.6		42.6	42.3	

ALIGNMENTS

			-24		10	
			Nucleic Acids Res. 15, 10070, 1987 Yitle: Nucleotide sequences of CDNAs coding for rat manganese-containing superoxide dis A.Reference number: S06310; MUID:88096516; PMID:3697077 A.Accession: S06310		Ljementos: A,Gene: SOD2 A,Gene: SOD2 C;Function: A;Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen a	
			perox		o dic	יט
666			ng su		al t	licte
un-119		7273	ainir	6691	radio	IP> pre
11-7		ID:95	-cont	ID:95	xide	ctase d <tn MAT> tatus</tn
nange		.1, Р	anese	т. Б	pero	oredu dicte ted <
it ixt_cl		19937	mange 7	8549	ss of	oxida predictedict
ra 3 #te		I: CAA	. rat	I:CAA(ecule	ion; tatus us pi
ursor r-199	1990	NOIA	g for MID:3	PIDN	2 mol	hondr n) #s #stat , His
prec t) 31-Ma	ober	7272;	codin 16; P	6690;	n of) mitoc ndrio (Mn) (His
(Mn) ay ra Sion	.D.	ID:95	DNAS 80965	2> ID:95	tatio	e (Mn ein; tocho tase anese
.1.1) (Norw revi	oo, J orary	N :00	1987 of c	<hoy 97; N</hoy 	175/1 dismu	nutas oprot e (mi dismu mang
1.15 cus ence	Crai	X566(0070, ences 10, M	3-222 X004 Found	5/1; the c	distraction of the control of the co
(EC rvegi #sequ	A.J.; IL Dat S2166	OY1> EMBL: .D.	5, 10 seque 80631	A 1', 168 EMBL: also	; 115 yzes	oxide
utase us no 1993 1661;	ard, e EMB ber: 1661	: DNA 22 <h ces: po, J</h 	es. 1 tide ber: 6310	66,'H Ges: Ges:	76/1 catal	super ganes trans t: su /Bind
dism Ratt -Mar- n: S2	to the number of S2	rype : 1-2 feren ; Cra	ids R ucleo e num n: S0	type: 1-1 feren 7-Gln	: D2 8/2; :	ily: : man ain: roduc 3,187
r 1 oxide cies: e: 31	Y.S. tted erencession	idues ss-re Y.S.	lc Ac le: N erenc essio	ecule idues ss-re	etics e: SO rons: ction	erfam words 4/Dom 222/P
RESULT 1 DSRIN superoxide dismutase (EC 1.15.1.1) (Mn) precursor - rat C;Species: Rattus norvegicus (Norway rat) C;Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 11-Jun-1999 C;Accession: S21661; S06310	R;Ho, Y.S.; Howard, A.J.; Crapo, J.D. submitted to the EmBL Data Library, October 1990 A;Reference number: S21661 A;Accession: S21661	A;MOLECTLE TYPE: DNA A;Residues: 1-222 - 40YXI> A;Cross-references: EMBL:X56600; NID:g57272; PIDN:CAA39937.1; PID:g57273 R;Ho, Y.S.; Crapo, J.D.	Nucleic Acids Res. 15, 10070, 1987 Affitie: Nucleotide sequences of CDNAs coding for rat m A;Reference number: S06310; MUID:88096516; PMID:3697077 A;Accession: S06310	A;Wolecule type: mRNA A;Residues: 1-166,'H',168-222 <hoy2> A;Cross-references: EMBL:Y00497; NID:g56690; PIDN:CAA68549.1; PID:g56691 A;Note: 167-Gln was also found</hoy2>	Cjemetics: A,Gene: SOD2 A,Gene: SOD2 C;Function: A,Description: catalyzes the dismu	C.Superfamily: superoxide dismutase (Mn) C.Keywords: manganese; metalloprotein; mitochondrion; oxidoreductase C.Keywords: manganese; metalloprotein; mitochondrion) #status predicted <tnp> F;1-24/Domain: transit peptide (mitochondrion) #status predicted <tnp> F;25-222/Product: superoxide dismutase (Mn) #status predicted <mat> F;50,98,183,187/Binding site: manganese (His, His, Asp, His) #status predicted</mat></tnp></tnp>
A # 0 0 0		H	_ ~ ~ ~		- 4404	

4;

Gaps

11;

57

176 THIPLIGVDIWEHAFYLOYKNVKPDYLAAVWSVINYKEAEAR 217

1 MSVRASLSSVSRQTFVAPPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQT 58

55.0%; Score 634.5; DB 1; Length 222; 55.4%; Pred. No. 6.5e-49; tive 30; Mismatches 58; Indels 11

Matches 123; Conservative Query Match Best Local Similarity

셤 ò qq δ g à Q

ð

```
Query Match 54.6%
Best Local Similarity 54.3%,
Matches 121; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: mRNA
A; Residues: 1-222 <CHU>
                                                                                                                                                                                                                                                                                                                                                                        A; Accession: 164848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Gene: MnSOD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C, Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Sun, Y.
Submitted to the EMBL Data Library, November 1992
A;Accession: 336129
A;Accession: 336129
A;Accession: 336129
A;Accession: 336129
A;Accession: 336129
A;Accession: 336129
A;Accession: 36129
A;Accession: 36129
A;Accession: 36129
A;Accession: 36129
A;Accession: 36129
A;Accession: A2581
A;Accession: A2581; Mullenbach, G.T.; Stempien, M.M.; Bell, G.I.
Nucleic Acids Res. 14, 9539, 1986
A;Title: Sequence of a cDNA coding for mouse manganese superoxide dismutase.
A;Reference number: A2581; MulD:87091590; PMID:3797253
A;Accession: A2581; MulD:87091590; PMID:3797253
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accession: A2581
A;Accessio
                                                                                                                                                                                                                                                                                        A;Accession: 157023
A;Accession: 157023
A;Status: translabated from GB/EMBL/DDBJ
A;Acteurle type: DNA
A;Residues: 1-222 cRES>
A;Cross-references: GB:S78846, NID:g1037119; PIDN:AAB34899.1; PID:g1037120
B;Jones, P.L.; Kucera, G.; Gordon, H.; Boss, J.M.
Gene 153, 155-161, 1995
A;Title: Cloning and characterization of the murine manganous superoxide dismutase-encod A;Reference number: JC4047; MUID:95180711; PMID:7875582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    æ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 NGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60 NNLNATEEKYHEALAKGDVITQVALQPALKFWGGGHINHTIFWINLSPKGGGE---PKGE 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTH 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LLEAIKRDFGSFEKFKEKLTAVSVGVQGSGWGWLGFNKEQGRLQIAACSNQDPLQGTTGL 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MLCRAACSTGRRLGPVAGAAGS-RHKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYV 59
superoxide dismutase (EC 1.15.1.1) (Mn) precursor - mouse
C;Species: Mus musculus (house mouse)
C;Decies: O2-Aug-1996 #sequence revision 02-Aug-1996 #text_change 18-Jun-1999
C;Accession: 157023; JC4047; $36129; A25581
C;Accession: 15.7 (Aleeberger, S.R.; Johns, J.; Levitt, R.C.
Mamm. Genome 6, 281-284, 1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 MSVRASLSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTXHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 2; Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gene.
                                                                                                                                                                                                                        mouse MnSOD or PMID:7613035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        55.0%; Score 634.5; DB 2
55.6%; Pred. No. 6.5e-49;
iive 30; Mismatches 62
                                                                                                                                                                                                                        A; Title: Structure and DNA sequence of the A; Reference number: 157023; MUID:95337589;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <JON>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Residues: 1-137,'M',139-222
A;Cross-references: GB:L35525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: DNA
A; Residues: 1-137, 'M'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    124;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
```

RESULT 3

```
the bovine manganous superoxic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C.Species: Homo sapiens (man)
C.Date: 04-Dec-1986 #sequence_revision 06-Feb-1995 #text_change 20-Apr-2000
C.Accession: S13162; S02272; S11756; S00356; S02230; S00663; A92447; I38033; A00520; A27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A,Note: cross-reference GB:M34665 cited in paper is not correct
R;Wispe, J.R.; Clark, J.C.; Burhans, M.S.; Kropp, K.E.; Korfhagen, T.R.; Whitsett, J.A.
Biochim. Biophys. Acta 994, 30-36, 1989
A;Title: Synthesis and processing of the precursor for human mangano-superoxide dismutass A,Reference number: S0272; MUID:89076921; PMID:2462451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C.Function:
A.Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R;Church, S.L.
Biochim. Biophys. Acta 1087, 250-252, 1990
A;Title: Manganese superoxide dismutase: nucleotide and deduced amino acid sequence of A;Reference number: $13162; MUD:91027939; PMID:1699607
A;Accession: $13162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese; metalloprotein; mitochondrion; oxidoreductase
F;1-24/Domain: transit peptide (mitochondrion) #status predicted <TNP>F;25-222/Product: superoxide dismutase (Mn) #status predicted <MAT>F;50,98,183,187/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 NGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGP 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121 LKKAIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTH 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MLSRAACST-SRRLVPALSVLGSRQKHSLPDLPYDYGALEPHINAQIMQLHHSKHHAAYV 59
                                 C,§pecies: Bos primigenius taurus (cattle)
C,Date: 15-Oct-1996 #sequence_revision 15-Aug-1997 #text_change 21-Jul-2000
C;Accession: 151918; 164848; 164850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MSVRASLSSVSRQTFVAPPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60 NNLNVABEKYREALEKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PQGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Cross-references: GB:S67819; NID:9460572; PIDN:AAD14001.1; PID:94261701
                                                                                                                                                                                                                                                                                                                                                    A;Status: preliminary; translated from GB/EMBL/DDBJ
*Modecule type: mRNA
A;Residues: 'PRGPRAST',1-222 <MEY1>
A;Cross-references: GB:L22092; NID:g498259; PIDN:AAA30655.1; PID:g498260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Residues: 1-7 <MEY2>
A;Cross-references: GB:L22093; NID:g498261; PIDN:AAA30656.1; PID:g552330
A;Accession: 164850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           superoxide dismutase (EC 1.15.1.1) (Mn) precursor [validated] - human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        178 IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                   RiMeyrick, B.; Magnuson, M.A.
Am. J. Respir. Cell Mol. Biol. 10, 113-121, 1994
Affitle: Identification and functional characterization of
A;Teference number: I51918; MUID:94121934; PMID:8292376
A;Accession: I51918
superoxide dismutase (EC 1.15.1.1) (Mn) precursor - bovine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  54.6%; Score 629.5; DB 2 54.3%; Pred. No. 1.8e-48; iive 32; Mismatches 63.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A,Status: preliminary; translated from GB/EMBL/DDBJ
A,Molecule type: DNA
A,Residues: 1-7,'R' <MEY3>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
```

m

```
A, Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   superoxide dismutase (EC 1.15.1.1) (Mn) precursor, mitochondrial (similarity) - leafy spv
                        C;Keywords: manganese; metalloprotein; mitochondrion; oxidoreductase
F;1-24/Domain: transit peptide (mitochondrion) #status predicted <TNP>
F;25-222/Product: superoxide dismutase (Mn) #status experimental <MAT>
F;50,98,183,187/Binding site: manganese (His, His, Asp, His) #status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C;Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese; metalloprotein; oxidoreductase
F;55,103,192,196/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        131 TSFGSLEGLVKKMSAEGAAVQGSGWVWLGLDKELKKLVVDTTANQDPLVTKGGSLVPLVG 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   71 LEQLDQAVNKGDASAVVKLQSAIKFNGGGHVNHSIFWKNLAPVKEGGGEPPKGSLGGAID 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               127 ESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPIIG 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63 NVTEEKYQEALAKGDVTAQIALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLE 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGINPLTKKLEVTTTANQDPL---LTHIPI 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           67 EESYSAAVGKEDVLIQVKLOSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIE 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          70
                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C,Species: Raphanus sativus (radish)
C,Date: 16-Jul-1999 #sequence_revision 16-Jul-1999 #text_change 20-Apr-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23 LGSRSIQTF------TLPDLPYDYSALEPAISGEIMQIHHQKHHQAYVINYNNA
                                                                                                                                                                                                                                                                                                                                                                           7 LSSVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAA
                                                                                                                                                                                                                                                                                                                                 6 SLSSVSRQTFVAPAAFQI--RAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16;
                                                                                                                                                                                                                                                                   10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 231;
                                                                                                                                                                                                 Length 222;
                                                                                                                                                                                                                                                               61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Molecule type: mRNA
A;Residues: 1-231 <KMO>
A;Cross-references: EMBL:AF061333; NID:g3108344; PID:g3108345
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 IGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEAEARLQA 220
                                                                                                                                                                                              Query Match 53.8%; Score 620; DB 1; Best Local Similarity 53.6%; Pred. No. 1.3e-47; Matches 118; Conservative 31; Mismatches 61.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; Score 614; DB 2;
; Pred. No. 4.6e-47;
20; Mismatches 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     183 VDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        superoxide dismutase (EC 1.15.1.1) (Mn) - radish
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            191 IDVWEHAYYLQYKNVRPDYLKNVWKVINWKYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C,Accession: T08181
R;Kwon, S.I.; An, C.S.
submitted to the EMBL Data Library, April 1998
Superfamily: superoxide dismutase (Mn)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           53.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 57.5*
Matches 122, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Reference number: Z16401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Accession: T08181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Gene: sod
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             T08181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                硆
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                   d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-64, N', 66-222 <RES>
A;Residues: 1-64, N', 66-222 <RES>
A;Cross-references: EMBL:XS9445; NID:g34708; PIDN:CAA42066.1; PID:g34709
B;Borgstahl, G.E.O.; Parge, H.E.; Hickey, M.J.; Beyer Jr., W.F.; Hallewell, R.A.; Tainer Cell 71, 107-118, 1992
A;Title: The structure of human mitochondrial manganese superoxide dismutase reveals a m
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C;Function:
A;Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Residues: 1-154,'Q',156-222 <BEC>
A;Cross-references: EMBL:Y00472; NID:g34710; PIDN:CAA68533.1; PID:g34711
R;Barra, D.; Schinina, M.E.; Simmaco, M.; Bannister, J.V.; Bannister, W.H.; Rotilio, G. J. Biol. Chem. 259, 12595-12601, 1984
A;Title: The primary structure of human liver manganese superoxide dismutase.
A;Reference number: A92447; MUID:85030346; PMID:6386798
                                                                                                                                                                                                                                                                                              A; Modecule type: mRNA
A; Residues: 1-64, 'N', 66-222 < EMB>
A; Cross-references: EMBL:X15132; NID:g34794; PIDN:CAA33228.1; PID:g34795
R;Ho, Y.S.; Crapo, J.D.
FEBS Lett. 229, 256-260, 1988
A; Title: Isolation and characterization of complementary DNAs encoding human manganese-(A); Reference number: S00356; MUID:88152250; PMID:2831093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              manganese superoxide dismutase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Molecule type: protein
A;Residues: 25-65,0',6'-111,'Q',113-132,'Q',134-147,150-154,'Q',156-222 <BAR>
A;R Clair, D.K.; Holland, J.C.
Cancer Res. 51, 939-943, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contents: annotation; X-ray crystallography, 3.2 angstroms, residues 25-222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  residues 25-222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Molecule type: mRNA
A;Residues: 1-81, T', 83-222 <HO1>
A;Cross=references: EMBL:Y00985; NID:g36536; PIDN:CAA68791.1; PID:g36537
A;Heckl, K.
Nucleic Acids Res. 16, 6224, 1988
A;Title: Isolation of cDNAs encoding human manganese superoxide dismutase.
A;Reference number: S02230; MUID:88289364; PMID:3399391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Residues: 1-13,'P',15,'V',17-122,'L',124-222 <HEC>
A; Cross-references: EMBL:X07834; NID:g36517; PIDN:CAA30687.1; PID:g36518
A; Note: the authors translated the codon CTG for residue 123 as Arg
R; Beck, Y; Oren, R.; Amit, B.; Levanon, A.; Gorecki, M.; Hartman, J.R.
Nucleic Acids Res. 15, 9076, 1987
A; Title: Human Mn superoxide dismutase CDNA sequence.
                                  A; Molecule type: mRNA
A; Residues: 1-81, T', 83-222 <WIS>
A; Residues: 1-81, T', 83-222 <WIS>
A; Cross-references: EMBL:X14322; NID:g34706; PIDN:CAA32502.1; PID:g34707
B; StClair, D.K.
submitted to the EMBL Data Library, April 1989
A; Description: Nucleotide sequence of a human tumor MnSOD cDNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Reference number: A43483; MUID: 93008233; PMID: 1394426
A;Contents: annotation; X-ray crystallography, 2.2 angstroms
R;Borgstahl, G.E.O.; Parge, H.E.; Tainer, J.A.
submitted to the Brookhaven Protein Data Bank, August 1992
A;Reference number: A51016; PDB: 1ABM
A;Contents: annotation; X-ray crystallography, 2.2 angstroms, A;Note: kidney recombinant form expressed in Escherichia coli R;Sussman, J.; Wagner, U.G.; Pattridge, K.A.; Ludwig, M.L.
submitted to the Brookhaven Protein Data Bank, November 1992
A;Reference number: A51304; PDB: 1MSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Title: Complementary DNA encoding human colon cancer m
A;Reference number: I38033; MUID:91105727; PMID:1988135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Reference number: S00663; MUID:88067716; PMID:3684581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cross-references: GDB:119597; OMIM:147460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Map position: 6q25.2-6q25.2
                                                                                                                                                                                                                             A;Reference number: S11756
A;Accession: S11756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Molecule type: mRNA Residues: 1-13,'P',1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Accession: I38033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Accession: S00356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Accession: S00663
```

```
Supercoxide dismutase (BC 1.15.1.1) (Mn) - guinea pig (fragment)
C;Species: Cavia porcellus (guinea pig)
C;Date: 28-Oct-1996 #sequence_revision 13-Mar-1997 #text_change 05-Mar-1999
C;Accession: 865795
R;Yuan, H.T.; Bingle, C.D.; Kelly, F.J.;
Biochim. Biophys. Acta 1305, 163-171, 1996
A;Title: Differential patterns of antioxidant enzyme mRNA expression in guinea pig lung A;Reference number: 865793; MUID:96180320; PMID:8597602
A;Accession: 865795
A;Molecule type: mRNA
A;Residues: 1-204 <YUA>
A;Gross-references: EMBL:U39843
A;Gross-references: EMBL:U39843
A;Gross-references: EMBL:U39843
A;Gross-references: EMBL:U39843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A, Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen C, Superfamily: superoxide dismutase (Mn)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese; metalloprotein; oxidoreductase
F;52,100,189,193/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    <u>ج</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C;Superfamily: superoxide dismutase (min)
C;Keywords: manganess; metalloprotein; mitochondrion; oxidoreductase
F;43,91,176,180/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  185
             211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        69 SYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEBATLSEGPLKKAIEES 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 KYQEALAKGDVTAQVALQPALKFNGGGHINHSIFWTNLSPNGGGE---PKGELLEAIKRD 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 118 PGSFDKFKEKLTAVSVGVQGSGWGWLGFNKERGCLQIAACSNQDPLQGTTGLIPLLGIDV 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Species: Prunus persica
C;Date: 21-Jul-2000 #sequence_revision 21-Jul-2000 #text_change 03-Nov-2000
C;Accession: T50828
R;Bagnoli, F.
submitted to the EMBL Data Library, October 1999
           152 GSGWVWLGLDKELKKLVFDTTANQDPLVTKGGSLVPLVGIDVWEHAYYLQYKNVRPEYLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPL---LTHIPIIGVDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9 SVSRQTFVAPAAFQIRAKHTLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          52.0%; Score 600; DB 2; Length 228; 55.9%; Pred. No. 7.8e-46; ive 25; Mismatches 61; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 204;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          superoxide dismutase (EC 1.15.1.1) (Mn) 1 [similarity]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        52.0%; Score 600; DB 2;
55.4%; Pred. No. 6.7e-46;
ive 27; Mismatches 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: mRNA
A; Residues: 1-228 <BAG>
A; Cross-references: EMBL:AJ238316; PIDN:CAB56851.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          178 WEHAYYLOLKNVRPDYLKAIWKVI 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      186 WEHAFYLQYKNVKPDYLAAVWSVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 55.9%
Matches 119; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 55.48
Matches 113; Conservative
                                                                  204 AVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Reference number: Z25247
A;Accession: T50828
                                                                                                   212 NVWKVINWKYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C, Genetics:
             g
                                                             ò
                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₹
                                                                                                                                                Eup
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TSO827

Superoxide dismutase (EC 1.15.1.1) (Mn) [similarity] - Arabidopsis thaliana

C;Baccies: Arabidopsis thaliana (mouse-ear cress)

C;Date: 21-Jul-2000 #sequence_revision 21-Jul-2000 #text_change 24-Oct-2000

C;Accession: T50827

R;Kliebenstein, D.J.; Monde, R.A.; Last, R.L.

R;Kliebenstein, D.J.; Monde, R.A.; Last, R.L.

Plant Physiol. 118, 637-650, 1998

A;Title: Superoxide dismutase in Arabidopsis: an eclectic enzyme family with disparate: A;Reference number: Z25246; MuID:98440686; PMID:9765550

A;Accession: T50827

A;Status: preliminary; translated from GB/EMBL/DDBJ
C;Species: Euphorbia esula (leafy spurge)
C;Date: 21-Jul-2000 #Sequence_revision 21-Jul-2000 #text_change 03-Nov-2000
C;Datession: 1750830
R;Anderson, J.V.; Horvath, D.F.
submitted to the EMBL Data Library, March 2000
A;Description: Identification of mRNAs expressed in underground adventitious buds of EA;PREference number: 225249
A;Accession: 150830
A;Reference number: 225249
A;Accession: T50830
A;Reference number: BMBL;ADBA
A;Residues: 1-237 -AND>
A;Residues: 1-237 -AND>
A;Residues: 1-237 -AND>
A;Residues: 1-237 -AND>
A;Cross-references: EMBL;AP242310; PIDN:AAF65768.1
C;Superfamily: superoxide dismutase (Mn)
C;Superfamily: superoxide dismutase (Mn)
C;Superfamily: superoxide dismutase (Mn)
C;Superfamily: Superoxide dismutase (Mn)
C;Reywords: manganese; metalloprotein; mitochondrion; oxidoreductase
F;60,108,196,200/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C;Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese; metalloprotein; oxidoreductase
F;55,103,192,196/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     74 KALEQLHEATEKGDSSTVVKLOSAIKFNGGGHINHSIFWKNLAPVGEGGELPHGSLGWA 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            125 IEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH---IPII 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           88 ALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIEESFGSFEAFKKKFNADTAAVQ 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             92 AIKFNGGGHVNHSIFWKNLAPSSEGGGEPPKGSLGSAIDAHFGSLEGLVKKMSAEGAAVO 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GSGWGWLGLNPLTKKLEVTTTANQDPLLTH----1PIIGVDIWEHAPYLQYKNVKDDYLA 203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7 LSSVSRQTFVAPAAFQIRAKHT--LPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   65 AAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  28 TLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKLQS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4,
                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 2; Length 237;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 231;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   52; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                     53.1%; Score 612.5; DB 2 56.3%; Pred. No. 6.4e-47; iive 25; Mismatches 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            52.1%; Score 601; DB 2;
59.7%; Pred. No. 6.5e-46;
ive 21; Mismatches 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182 GVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Residues: 1731 «KLI»
A;Cross-references: EMBL:AF061518; PIDN:AAC24832.1
A;Cross-references: EMBL:AF061518; PIDN:AAC24832.1
C;Genetics:
C;Genetics:
A;Gene: MSD1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 59.73
Matches 114; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Simi
Matches 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         \delta
```

```
A,Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen a C,Superfamily: superoxide dismutase (Mn) C,Superfamily: superoxide dismutase (Mn) C,Keywords: manganese; metalloprotein; oxidoreductase F;55,103,192,196/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Superoxide dismutase (EC 1.15.1.1) (Mn) - Para rubber tree
C;Species: Hevea brasiliensis (Para rubber tree)
C;Species: Hevea brasiliensis (Para rubber tree)
C;Date: 19-Mar-1997 #sequence_revision 19-Mar-1997 #text_change 28-May-1999
C;Accession: 839492
R;Miao, Z.; Gaynor, J.J.
R;Miao, Z.; Gaynor, J.J.
A;Title: Molecular cloning, characterization and expression of Mn-superoxide dismutase
A;Reference number: 839492; MUID:94031306; PMID:9219064
                                                                                                                   A;Genome: nuclear
(S.Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese; metalloprotein; mitochondrion; oxidoreductase
F;55,103,192,196/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              116 GGGELPHGSLGWAIDADFGSLEKIJQLMNAEGAALQGSGWVMLALDKELKKLVVETTANQ 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            138 KFNADTAAVQGSGWGWLGINPLTKKLEVTTTANQDPLLT-----HIPIIGVDIWEHAFYL 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           142 KANAEGAALQGSGWVWLALDKEAKRLSVETTPNQDPLVTKGSNLH-PLLGIDVWEHAYYL 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               52 HTKHHQTYVNGLNAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGS 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          56 HOKHHQTYITNYNKALEQLNDAIEKGDSAAVVKLOSAIKFNGGGHVNHSIFWKNLAPVRE 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     112 BEATLSEGPLKKAIBESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQ 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21
                                                                                                                                                                                                                                                                                                                                                                                                                                              81
A;Residues: 1-231 <WUG>
A;Cross-references: EMBL:U72212; NID:g1622928; PIDN:AAB68035.1; PID:g1621627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    22 PAAARGVATFTLPDLPYDYGALEPAVSGEIMRLHHQKHHATYVANYNKALEQLDAAVSKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         78 DVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAIBESFGSFEAFKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18 PAAFQIRAKHILPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNAAEESYSAAVGKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MSVRASLSSVSRQTFVAPAAF----QIRAKHT--LPELPYAYDALEPSISKEIMTLH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: GB:L11707; NID:g348136; PIDN:AAA16792.1; PID:g348137 C;Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18;
                                                                                                                                                                                                                                                                                                                          . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DPLVTKGPTLVPLLGIDVWEHAYYLQYKNVRPDYLKNIWKVMNWKYA 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 51.6%; Score 595; DB 2; Length 233; Best Local Similarity 53.3%; Pred. No. 2.2e-45; Matches 121; Conservative 30; Mismatches 58; Indels
                                                                                                                                                                                                                                                                  Length 231;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DPLLTH----IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA
                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                            Ouery Match 51.7%; Score 596; DB 2; I
Best Local Similarity 55.2%; Pred. No. 1.8e-45;
Matches 116; Conservative 23; Mismatches 65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        201 QYKNVRPDYLINIWKVVNWKYAGBEYEKVL 230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QYKNVKPDYLAAVWSVINYKEAEARLQAAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-233 <MIA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession: S39492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               172
                                                                                          A; Gene: SOD3.1
                                                              C;Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT
                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             臼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C,Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 11-Jun-1999 C,Accession: S18343; S15560 C.Accession: S18343; S15560 S. A. J. Allen, R.D. Plant Mol. Biol. 17, 127-1274, 1991 A;Title: Isolation and sequence analysis of a cDNA that encodes pea manganese superoxide A,Reference number: S18343; MUID:92032795; PMID:1932701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A)Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen C;Superfamily: superoxide dismutase (Mn)
C;Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese; metalloprotein; mitochondrion; oxidoreductase
F;1-36/Domain: transit peptide (mitochondrion) #status predicted <TNP>
F;37-240/Peroduct: superoxide dismutase (Mn) #status predicted <MAT>
F;64,112,201,205/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                        DINFGSIBALVQKANARGAALQGSGWVWIALDKELKKLVVETTANQDFLVTKGPTLVPLL 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56 HQTYVNGLNAARESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSERAT 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           116 LSEG---PLKK----AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTT 168
                                                                                                                                                                                    67 ALEQIHDAISKGDAPTVAKIHSAIKFNGGGHINHSIFWKNLAPVREGGGEPPKGSLGWAI 126
                                                                                                                                                                                                                                                                     EESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPII 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 55
                                                              7 VSRRTLATGLGFRQQLRGLQTFSLPDLPYNYGALEPAISGDIMQLHHQNHQTYVTNYNK 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C;Species: Triticum aestivum (common wheat)
C;Date: 30-Apr-1999 #sequence_revision 30-Apr-1999 #text_change 20-Apr-2000
C;Accession: T06258
R;Wu, G:; Robertson, A.J.; Wilen, R.W.; Gusta, L.V.
submitted to the EMBL Data Library, September 1996
A;Reference number: Z1551
A;Accession: T06258
A;Accession: T06258
A;Accession: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4 RASLSSVSRQ-----TFVAPAAFQIRAKH--TLPELPYAYDALEPSISKEIMTLHHTKH
                                  10 VSRQTFVAPAAF -- QIRAKHI -- LPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9 RKTLSSVLRNDAKPIGAAIAAASTQSRGLHVFTLPDLAYDYGALEPVISGEIMQIHHQKH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A, Cross-references: EMBL:X60170; NID:g20901; PIDN:CAA42737.1; PID:g20902
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                182 ANODPLVTKGASLVPLLMIDVWEHAYYLQYKNVRPDYLKNIWKVINWKHA 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              169 ANODPLLTH----IPIIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 240;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   superoxide dismutase (BC 1.15.1.1) (Mn) precursor - garden pea
C;Species: Pisum sativum (garden pea)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            superoxide dismutase (EC 1.15.1.1) (Mn) precursor - wheat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 52.0%; Score 600; DB 1; Best Local Similarity 54.3%; Pred. No. 8.4e-46; Matches 125; Conservative 28; Mismatches 51.
                                                                                                                                                                                                                                                                                                                                                                                            GVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                              GIDVWEHAYYLQYKNVRPDYLKNIWKVINWKYA 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: mRNA
A; Residues: 1-240 < WON>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Accession: S18343
                                                                                                                                                        99
                                                                                                                                                                                                                                                                                                                                    127
                                                                                                                                                                                                                                                                                                                                                                                               182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                          d
                                                                                                                                                     à
                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                        ď
                                                                                                                                                                                                                                                                                                                          qq
                                                                                                                                                                                                                                                                                                                                                                                            ŏ
```

Ę

ŝ

ω ,,

Gaps

11;

63 67

```
A; Description: catalyzes the dismutation of 2 molecules of peroxide radical to dioxygen a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       submitted to the EMBL Data Library, December 1994
A;Description: Rice manganese superoxide dismutase are encoded by multigene family.
A;Reference number: Z15187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Superfamily: superoxide dismutase (Mn)
C; Superfamily: superoxide dismutase (Mn)
C; Keywords: manganese; metalloprotein; mitochondrion; oxidoreductase
F; 1-27/Domain: transit peptide (mitochondrion) #status predicted <TND>
F; 28-231/Product: superoxide dismutase (Mn) #status predicted <MAT>
F; 55, 103, 192, 196/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                   64 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68 NKALEQLDAAVAKGDAPAIVHLOSAIKFNGGGHVNHSIFWNNLKPISEGGGDPPHAKLGW 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68 NKALEQLDAAVAKGDAPAIVHLOSAIKFNGGGHVNHSIFWNLKPISEGGGEPPHAKLGW 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 124 AIEESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NAAEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   128 AIDEDFGSFEALVKKMSAEGAALQGSGWVWLALDKEAKKLSVETTANQDPLVTKGANLVP 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SRQTFVA---PAAFQIRAKH----TLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Species: Oryza sativa (rice)
C;Date: 23-Apr-1999 #sequence_revision 23-Apr-1999 #text_change 20-Apr-2000
                                                                                                                                                                                                                                                                                            124 AIBESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IP
                                                                                                                                                                                                                         --TLPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Residues: 1-231 <PAN>
A;Cross-references: EMBL:L34039; NID:g601870; PIDN:AAA57131.1; PID:g601871
A;Experimental source: cv. IR36, shoot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 probable superoxide dismutase (EC 1.15.1.1) (Mn) 2 precursor - rice
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 231;
                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 51.2%; Score 590.5; DB 2; Best Local Similarity 54.9%; Pred. No. 5.6e-45; Matches 118; Conservative 24; Mismatches 62;
                                                                                                62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180 IIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           188 LLGIDVWEHAYYLQYKNVRPDYLSNIWKVNNWKYA 222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180 IIGVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                          ed. No. 5.6e-45;
Mismatches 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Accession: T04075
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
                                          Pred. No.
54.9%; Fil. 24;
                                                                                                                                                                                                                   11 SROTFVA---PAAFOIRAKH-
                                                                                                Matches 118; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C,Accession: T04075
R;Pan, S.M.; Chen, J.C.
submitted to the EMBL Data
                                          Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Gene: rmsod2
A;Genome: nuclear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                             \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                         stress in Nicoti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     to dioxygen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             to dioxygen
                                                            Superoxide dismutase (EC 1.15.1.1) (Mn) precursor - curled-leaved tobacco C;Species: Nicotiana plumbaginifolia (curled-leaved tobacco) C;Species: Nicotiana plumbaginifolia (curled-leaved tobacco) C;Species: Nicotiana plumbaginifolia (curled-leaved tobacco) C;Species: No.6599 C;Accession: S0.6599 ERBO U. B., 31-38, 1989 BS99 R;Bowler, C;Alliotte, T.; de Loose, M.; van Montagu, M.; Inze, D. EMBO U. B., 31-38, 1989 A;Title: The induction of manganese superoxide dismutase in response to stress in Nic A;Reference number: S0.8639; MuID:89231633; PMID:2540959 A;Molecule type: mRNA A;Residues: 1-228 ASON> A;Molecule type: mRNA A;Residues: 1-228 ASON> A;Cross-references: EMBL:X14482; NID:g19692; PIDN:CAA32643.1; PID:g19693 A;Molecule type: msva cv. P2 C;Genetics: C;Genetics: C;Cenetics:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cibecies: Oryza sativa (EC 1.15.1.1) (Mn) precursor - rice (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Oryza sativa (rice) (ispecies: Original (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (ispecies) (is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A,Description: catalyzes the dismutation of 2 molecules of peroxide radical to dis C;Superfamily: superoxide dismutase (Mn)
C;Superfamily: superoxide dismutase (Mn)
C;Keywords: manganese, metalloprotein, mitochondrion, oxidoreductase
F;1-27,Domain: transit peptide (mitochondrion) #status predicted <TNP-
F;28-231/Product: superoxide dismutase (EC 1.15.1.1) (Mn) #status predicted <MAT-
F;55,103,192,196/Binding site: manganese (His, His, Asp, His) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66 AEESYSAAVGKEDVLTQVKLQSALKFNGGGHINHSLFWKNLAPYGSEEATLSEGPLKKAI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BESFGSFEAFKKKFNADTAAVQGSGWGWLGLNPLTKKLEVTTTANQDPLLTH----IPII 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ::||| || :| ||| :| ||: ||| ||| ||| ||: ||| |||| :: ||| ||| ||| :: ||: ||| ||| :: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: ||: |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10 VSRQTFVAPAAR--QIRAKHT--LPELPYAYDALEPSISKEIMTLHHTKHHQTYVNGLNA 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7 VSRRTLATGLGFRQQLRGLQTFSLPDLPYDYGALEPAISGDIMQLHHQNHHQTYVTNYNK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 228;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51.3%; Score 592; DB 2; Length 22:
54.0%; Pred. No. 4e-45;
ive 30; Mismatches 60; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GIDVWEHAYYLQYKNVRPDYLKNIWKVMNWKYA 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GVDIWEHAFYLQYKNVKPDYLAAVWSVINYKEA 214
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 54.09
Matches 115; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Genome: nuclear C;Function:
```

67 126

g à

à dd à g

ò g

187 182

Gaps

completed: March 30, 2004, 17:10:58 ne : 27 secs

Search co

DB 2; Length 231;

Score 590.5;

51.2%;

Query Match